

**ESTIMATES COMMITTEE
(1967-68)**

THIRTY-SIXTH REPORT

(FOURTH LOK SABHA)

**MINISTRY OF FOOD, AGRICULTURE, COMMUNITY
DEVELOPMENT AND COOPERATION**

[DEPARTMENT OF AGRICULTURE]

**Central Marine Fisheries Research Institute, Mandapam
Camp**



**LOK SABHA SECRETARIAT
NEW DELHI**

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C O R R I G E N D A

TO

Thirty-Sixth Report (Fourth Lok Sabha)
of Estimates Committee on the Ministry
of Food, Agriculture, Community Deve-
lopment and Cooperation (Department
of Agriculture) - Central Marine
Fisheries Research Institute,
Mandapam Camp.

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- Page 4, para 1.10, line 2, for
'productoon' read 'production'.
Page 6, para 1.17, line 9, for
'acquired' read 'acquired'.
Page 7, para 1.18, line 17, for
'inptient' read 'inpatient'.
Page 10, para 2.3, line 2, for
'were' read 'are'.
Page 14, para 2.12, line 6, for
'got' read 'get'.
Page 16, para 2.16, line 4, add
'as a' after the word 'that'.
Page 17, para 2.20, line 5, for
'They' read 'There'.
Page 19, para 3.5, line 4, for
'tpye' read 'type'.
Page 19, para 3.9, line 4, for
'affective' read 'effective'.

Page 23, para 3.22, line 5, for
'these' read 'three'.

Page 39, para 4.12, line 15,
delete 'effort,'.

Page 43, para 4.30, line 5, add
'time' after the word 'wasting'.

Page 43, para 4.30, line 12, for
'by' read 'for'.

Page 44, para 4.32, line 4, for 'As'
read 'At'.

Page 50, para 5.13, line 6, add 'when
approved, would seriously lag behind,
if simultaneous steps' after the words
'Fourth Plan Schemes',

Page 51, para 5.13, line 2, delete
the words 'when approved x x x x x x
x x x x x x x x simultaneous steps'.

Page 80, serial No. 9, para 3.16,
line 12, for 'indentical' read
'identical'.

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(1967-68)

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INTRODUCTION

I, the Chairman, Estimates Committee, having been authorised by the Committee to submit the Report on their behalf, present this Thirty-sixth Report on the Ministry of Food, Agriculture, Community Development and Cooperation (Department of Agriculture)—Central Marine Fisheries Research Institute, Mandapam Camp.

2. The Committee took evidence of the representatives of the Ministry of Food, Agriculture, Community Development and Co-operation (Department of Agriculture) and Central Marine Fisheries Research Institute, Mandapam Camp on the 7th November, 1967. The Committee wish to express their thanks to the Secretary, Joint Secretary and Joint Commissioner (Fishery), Ministry of Food, Agriculture, Community Development and Cooperation (Department of Agriculture), Director-General, Indian Council of Agricultural Research, Director, Central Marine Fisheries Research Institute, Mandapam Camp and other Officers of the Ministry of Food, Agriculture, Community Development and Cooperation (Department of Agriculture) and Central Marine Fisheries Research Institute, Mandapam Camp for placing before them the material and information they wanted in connection with the examination of the estimates.

3. They also wish to express their thanks to Shri Kurwath Damodaran, Vice-Chairman of the Marine Products Export Promotion Council, Ernakulam; Shri R. Madhavan Nayar, Ex-President, Seafood Canners and Freezers' Association of India, Cochin, and Dr. N. K. Panikkar, Director, National Institute of Oceanography, Council of Scientific and Industrial Research, New Delhi for giving evidence and making valuable suggestions to the Committee.

4. The Committee also wish to thank Shri T. Muthu-Kannappan, Member, Central Board of Fisheries, Dr. S. B. Setna, Managing Director, New India Fisheries Ltd., Bombay; and Kerala Fisheries Corporation Ltd., Ernakulam for furnishing Memoranda to the Committee.

5. The Report was considered and adopted by the Committee on the 25th January, 1968.

6. A statement showing the analysis of recommendations contained in the Report is also appended to the Report (Appendix VII).

NEW DELHI;
February 12, 1968.

Magha 23, 1889 (Saka).

P. VENKATASUBBAIAH,
Chairman,

Estimates Committee.

CHAPTER I

INTRODUCTION

A. Genesis

1.1. Until the early forties of this Century fisheries has been a transferred subject, research and development being the concern of the then existing provinces and states. Except for the enactment of the "Indian Fisheries Act" of 1897 the Government of India had no direct interest in the fisheries of the country. The fisheries departments as they existed then were mainly revenue minded. However, studies on fishes and other aquatic fauna were being carried out by the Surgeon-Naturalists of the Marine Survey of India and the Officers of the Zoological Survey of India. Work on some aspects of aquatic sciences was being conducted in a number of Universities also.

1.2. Lack of supply of adequate quantities of good quality fish during the Second World War was mainly responsible for awakening the Government of India to the need for taking direct interest in the research, development and conservation of the fishery resources of the country. The immediate result of this was the initiation of some research schemes by the Indian Council of Agricultural Research.

1.3. The proposal for the establishment of a Central Fisheries Research Institute in India was first made in 1943 by Dr. Bains Prashad, who was then Director of the Zoological Survey of India, in his Memorandum on the "Post-war Development of Indian Fisheries". In the opening para of this document he has stated as follows:—

"I recommend that a Central Fisheries Research Institute be established by the Government of India on lines similar to those of the Agricultural Research Institute at New Delhi, the Veterinary Research Institute at Mukteshwar and Izatnagar and the Forest Research Institute at Dehra Dun. Agriculture including veterinary work, and forestry are, like fisheries transferred subjects; but the Government of India are maintaining fully equipped and well-staffed research institutes for the study of the problems connected with these subjects, and there seems to be no

reason why the development of Indian fisheries, which in their importance are second only to agriculture and animal husbandry, should not be taken up along similar lines."

The proposals till then had been that the Central Government should promote studies on fish and fisheries by strengthening the staff of the Zoological Survey of India to give expert advice in fisheries to local governments and others as per the recommendations contained in the Report of the Industrial Commission of 1916—1918. The above view lingered for decades with some modifications till Dr. Baini Prashad in his Memorandum stated that he is "definitely of the opinion that it would be best if a separate central Research Department of Fisheries of the Government of India is constituted instead of tagging it on to the Zoological Survey of India", and that "it would not be in the best interests of fishery research in India to make it a subsidiary of the activities of the Zoological Survey of India."

The above recommendation first paved the way for considering the establishment of a central fisheries research institute and this was endorsed by the Fish Sub-Committee of the Policy Committee on Agriculture, Fishery and Fisheries in their Report in 1945. Ultimately based on the "Memorandum on the proposed Fishery Research Institute" by the late Lt. Col. Dr. R. B. Seymour Sewell in 1946 the Central Marine Fisheries Research Station (as known then) came into existence in 1947.

1.4. The Central Marine Fisheries Research Institute of the Government of India under the then Ministry of Food and Agriculture, was established on the 3rd February, 1947 with temporary accommodation provided by the University of Madras at the Zoological Research Laboratories at Madras and was subsequently shifted to Mandapam Camp in 1949. Mandapam Camp is situated on the Madras—Rameshwaram Railway route. It is 144 km. south-east of Madurai which is also the nearest airport. The distance from Mandapam Camp to Rameshwaram is about 19 km. No motorable road existed then between Ramanathapuram and Mandapam Camp and the only mode of transport available was the rail.

1.5. The Central Marine Fisheries Research Institute was directly under the Ministry of Food, Agriculture, Community Development and Cooperation (Department of Agriculture) till September, 1967. It was transferred to Indian Council of Agricultural Research with effect from 1st October, 1967.

B. Objectives

1.6. It has been stated that the Institute has, as its prime objective, investigations which would lead to the estimation and conservation of marine fishery resources of the country. For this the first step would be to assess the present level of exploitation, to gather detailed information on the individual species of fish that go to constitute the chief fishery of the country, as a means of assessing their potential and planning better exploitation without harm to sustaining stocks; as also to study such environmental factors as are likely to influence the nature and magnitude of these fisheries.

1.7. It has further been stated that the basic objectives have, to a large extent, been fulfilled. The investigations so far have covered most of the major fisheries on the east and west coasts, and touched on those of Andamans and Laccadives, and have included country-wide survey of fish landings and assessment of catch and effort, compilation and analysis of exhaustive data on distribution, abundance, habit and life history, food, rate of growth, age and migration of the economically important fishes, shrimps and shell fishes of Indian waters, together with studies on marine biological and oceanographic factors to understand the relationship between these environmental factors and the fisheries.

1.8. The Committee have been informed during evidence that the Institute has been conducting research on the fishery biology, abundance of fish eggs and fish food in the sea, etc. It has also been conducting oceanographic observations of currents, and temperature which determine the migration of fish to some extent. This work is of a continuing nature because the environmental conditions in the sea are changing all the time. The results achieved by the Institute are utilised by the Deep Sea Fishing Institutions for actual fishing operations.

It has been further stated that the Institute has studied a large number of fishes in relation to their biology and frequency and the rate of growth of the food taken by them. It has studied the oceanographic conditions in the west coast resulting in the finding of the upwelling on the Arabian sea. Recently two papers have been brought out showing the results of the surveys jointly conducted by this Institute and the Deep Sea Fishing Station.

1.9. Asked about the steps taken by the Institute to augment the fish production in India from marine sources so as to provide cheap and nutritious food to people, the representative of the Ministry has stated:

“There is a big potential in our seas. Our first job was to estimate the possible fishery areas, the concentration of

fish, and our understanding is that by now the shallow waters have been fairly well-charted. We are on to the job of charting up to 40 fathoms.....A large number of small boats are working on the shallow waters. About deeper waters, charting has been done in certain areas where some private sector operators are already utilising the knowledge. The catches are mainly exportable prawn There is already the demand for more of this material. It is a problem of development and how to exploit the resources we had charted out."

Explaining the difficulties involved in charting the 73 million square kilometres of water mass, the Director of the Central Marine Fisheries Research Institute has stated:

"It is not a very easy thing to chart this in a very systematic manner without the necessary facilities for it. We have got some vessels and we have been able to make a sort of general random survey of some of the areas to the extent our facilities would permit.....We have to work with the facilities in hand, and we have been trying to do the best with the present explorable fishing vessels and the research vessels, and we know that there is great scope for expansion.....At present, the major country that is fishing is Japan, closely followed by Russia, Korea, Taiwan and so on. I am referring to areas far beyond our conventional fishing grounds, and from the reports available from them also, we are in a position to say that our fish production could be expanded."

1.10. In a written note submitted to the Committee it has been stated that marine fisheries being capture fisheries, production of fish could be increased only by more efficient and intensive fishing of existing grounds and/or by extending the area fished. The successful charting of newly explored grounds and proper demarcation of fishing areas that have better yields, depend largely on a thorough analysis of the data collected from explanatory survey cruises. From the time of the first systematic attempts at exploratory fishing in Bombay-Saurashtra waters by the Government of India trawlers 'Ashok' and 'Pratap' and the Japanese vessel 'Taiyo Maru 17' the scientists of the Institute have regularly participated in the collection of data and subsequent analysis of the same. Thus data gathered from explorations based from Veraval, Bombay, Goa, Karwar, Mangalore, Cannanore, Cochin, Tuticorin, Mandapam, Visakhapatnam and Calcutta were studied by the Institute. The valuable trawling grounds off Dwarka and Kutch were discovered as a result

of such study, and based on indications from early studies, the Kutch area particularly was thoroughly charted for all months of the year with complete analysis for annual regional averages of catch, effort and return, species composition, seasonal abundance of choice groups and so on. The area has now been found to be the most productive off-shore trawling grounds in Indian waters.

1.11. It has further been stated that the studies have given such essential information to the industry as that gear other than trawl (e.g. gill-netting, long-lining, purse-seining) are relatively unsuitable for these areas; that bull trawling is more rewarding than other trawling; that day fishing is more productive than night fishing that catches are better during neap tide than during spring tide; that fishes like Dera and Koth are more abundant on the landward side of the 20 fathom line while Ghol and Karkara were more on seaward side. From intensive fishing based on results of such studies, the production of trawl fishes from this area has gone up from 1,77,992 kg. in 1950 to 46,76,580 kg in 1960.

1.12. In view of the rapid development of the prawn industry especially along the west coast of India and the ever increasing demand for them in the foreign markets, potential prawn resources have been under careful study and the availability of economic varieties of prawns in depths beyond the limits now fished have been located and pointed out.

1.13. Similarly, on the east coast, the lucrative chank and oyster fisheries had existed over the years on traditional fishing grounds. The Institute pioneered a systematic underwater survey of the oyster beds off Tuticorin in collaboration with the State Fisheries Department and many changes in pattern of beds have been brought to light. Also, such problems as the deleterious effect of silting and sediment suspension over oyster beds were studied and remedial measures attempted. Fresh, extensive, unfished chank beds, which have greater scope for exploitation and where the chanks are found to grow larger, have been marked out.

1.14. Another significant part of the investigation of the Institute has resulted in the development of a lucrative sea-weed industry in the country.

1.15. The Committee note the pioneering efforts made by the Central Marine Fisheries Research Institute in the charting and exploitation of fishing grounds in the inshore and off-shore areas, studies on the life histories of component species and collection of biological, oceanographical and other environmental data which are

essential for understanding the causes of fluctuations in the availability of fisheries and for introducing conservation measures, when required, to obtain steady optimum yields. The Committee would, however, like to point out that the estimated marine fish production in India has varied between 5.3 to 8.8 lakh tonnes during the years 1950 and 1964. There is a pressing need for increasing the production by means of increased catches so as to provide nutritious diet to the people, employment to a large number of fishermen and also provide an exportable surplus for purposes of earning foreign exchange.

1.16. The Committee commend the steps taken by the Institute for the exploration of the oceanic fishery resources of the seas around India. They hope that the researches would be further intensified with special emphasis on the pelagic and oceanic fishes and crustacean. The Committee suggest that concerted steps be taken to gear up the work of the Institute by providing them with adequate essential equipments so that the objectives of the Institute are fully realised. The Committee would also stress the need for forging an intimate link with the fishing industry so that the researches undertaken by the Institute can be gainfully utilised.

C. Location

1.17 As already stated earlier, the Central Marine Fisheries Research Institute, which was established on the 3rd February, 1947, was temporarily accommodated at the Zoological Research Laboratories at Madras and was subsequently shifted to Mandapam Camp in 1949. The Committee have been informed that the buildings constructed originally for the Naval Hospital by the Defence Department during the World War II which were lying abandoned in dilapidated conditions overgrown with thorny jungles and infested by reptiles were acquired and converted into laboratories and temporary residences for the staff at considerable expense and effort. Subsequently, an aquarium was built and circulating sea water facilities were provided for keeping marine fisheries and other organisms for study. About a hundred acres of land adjoining the Institute was acquired for expansion of the activities and for building permanent residences which were completed in 1958. The experimental marine fish farm of the Institute suffered extensive damage during the cyclone and tidal wave which hit this part of the coast in December 1964 with unprecedented fury. The experimental fish farm had to be abandoned partly because of this and also because the results of the experiment carried out were not encouraging owing to the unsuitability of the area for any economic fish farming.

1.18. It has been represented to the Study Group of the Estimates Committee which visited the Institute in September, 1967 that Mandapam Camp does not possess any locational advantages. Whereas the location would be excellent, perhaps even ideal for basic biological research by visiting scientists and research scholars in Marine Biology for short periods, the requirements for marine fisheries research are lacking. Marine fisheries, being essentially capture fisheries, the basic research work would have to be carried out on the areas of occurrence of the main fisheries and the area at Mandapam does not possess say sizeable fisheries of commercial magnitude. Moreover, the living conditions at Mandapam Camp are extremely difficult. Proper educational facilities and medical facilities are very much lacking in this place. Even the high school in the regional language is far from the campus and as the staff members are drafted from various States, the local school in the regional language does not fully cater the needs. Hospital facilities are completely absent. For any emergency and inpatient treatment one has to move to Ramnad at a distance of 35 kms. and there are no adequate conveyance facilities available. Mandapam Camp is so isolated and the nature of terrain is such that any storm or cyclone cuts the people into a stage of starvation as has happened several times. Even good water is not available. The subsoil water is brackish during the greater part of the year and the tubewells which are the main source of drinking water give out only in trickles during the summer months when the demand for water is maximum.

1.19. Asked to state the considerations that weighed with the Government in locating the Institute at Mandapam Camp, the representative of the Ministry has stated during evidence:

“Broadly there were facilities available at Mandapam Camp and Dr. Seymour Sewell thought that these facilities can be used for marine station. The buildings were readily available and so the Centre was located there.”

He has admitted that Mandapam Camp is not suitable as headquarters of the Marine Fisheries Research Institute. In fact, only 15 members of scientific staff are at headquarters and the rest of them are scattered in Sub-Stations like Ernakulam which deal with the substantial part of their research. He has stated that the suitable location would be one of the major port areas where the bulk of the fishing trade is located. He has indicated that the Institute would be shifted ‘as soon as the building problem is sorted out and funds are available’ to one of the better port location and three locations are under consideration, namely, Madras, Tuticorin and Ernakulam. A Sub-station of the Institute would, however, be kept at Mandapam Camp.

Asked to state the appointed time when the disadvantages of Mandapam as the Headquarters of the Institute first came to light, the representative of the Ministry has stated during evidence that the Director drew the attention of the Ministry towards this problem in July, 1965.

1.20. The Committee desired to have a note on the relative merits of these three locations indicating the broad estimates of expenditure involved in shifting to any of these. In a note furnished to the Committee by Government, it has been stated that the more important commercial species of fishes and fishery of India such as mackerel, sardine, prawns and the malabar sole on which the Institute is mainly conducting scientific research along with others of lesser importance is concentrated on the West Coast of India. Most of the Central Government Fisheries Institutions such as Central Institute of Fisheries Technology, Central Institute of Fisheries Operatives and Indo-Norwegian Project are situated at Ernakulam on this coast along with many of the State Fisheries Offices. The Oceanographic Laboratory of the Kerala University, the Indian Naval Physical Laboratory, the Indian Ocean Biological Centre and the Oceanographic and Biological laboratories of the National Institute of Oceanography are also situated there. It has a good natural all weather harbour and berthing facilities and a number of marine workshops. Many private fishing and fish products industries and undertakings earning valuable foreign exchange are also located in the area. All these would enable better coordination of scientific research and development activities of the Institute if Central Marine Fisheries Research Institute is also situated in this place, in addition to being nearer to the place of the fisheries potential. The rich tuna fishing grounds of the Laccadive sea are in close proximity. It is also a District Headquarters and the place is surrounded by backwaters in addition to its nearness to the Arabian Sea. The biggest of the Sub-station of the Institute is also located in this city.

There would, however, be the problem of accommodation for the offices and laboratories as well as for the staff and some special arrangements may have to be made for this purpose.

As an alternative, the State Capital City of Madras has been suggested in case for any reason Ernakulam is not finally selected. The place is on the East Coast facing the Bay of Bengal. The Madras State Government's Fisheries Offices are situated at this place. It has a good harbour and a number of marine workshops but accommodation for fishing vessels within the harbour is not provided for want of space. A fishing harbour is proposed to be constructed in Madras. The only Sub-station on the East coast is situated here.

As a third alternative, the place Tuticorin on the east coast facing Bay of Bengal has been suggested if the earlier two places are not ultimately chosen. In addition to its being a sea port it has the added advantage of the Fishing Harbour proposed to be constructed. The District Headquarters is about 30 miles away at Tinnevely which has all the essential facilities of a District town. It is, however, away from any airport, the nearest being at Madurai about 30 miles away.

The expenditure on shifting of headquarters would be mainly on account of T.A. and transport of personal effects of staff, shifting of laboratory and office ware. These might run to about Rs. 30,000 in case of Madras and Ernakulam and Rs. 20,000 in case of Tuticorin. In addition, there would be a recurring expenditure of Rs. 40,000 on office rent.

1.21. The Committee realise that marine fisheries being essentially capture fisheries, all the basic research has to be carried out necessarily in the areas of occurrence of the fisheries. The research worker has to be where the fish and fisheries are distributed. Therefore, the Marine Fisheries Research Institute should necessarily be located nearest to important centres of fishing with facilities for reception of sea-going research and exploratory vessels as a *sine qua non*.

1.22. The Committee are surprised that although a period of 20 years has elapsed since the setting up of the Institute, the Ministry have now come to realise that Mandapam Camp is not ideally located for purposes of marine fisheries research. It should have been possible for the Director of the Institute to move the Ministry on this matter earlier than 1965 when the proposal was said to have been finally mooted by him. The Committee are unhappy to note that the main criterion, which guided the selection of Mandapam Camp as the headquarters of the Institute, was only the availability of buildings at the Camp and the Institute was located there despite the conviction that the place was not suitable for the purpose. The Committee have little doubt that had the Institute been located at a central place, it could have made greater impact on research, and its output in physical terms would have been greater. The Committee are of the view that the Institute, which holds a pivotal position for research in marine fisheries, should be located at a central place. As, however, a heavy financial outlay is involved in shifting the Institute, the matter has got to be examined carefully.

The Committee suggest that a study team consisting of representatives from the Central Government, the Institute and the concerned State Governments may be appointed to go into the question in all its ramifications before arriving at a final decision.

CHAPTER II

ADMINISTRATION

A. Organisational Set-up

2.1. The organisational set up of the Institute may be seen at Appendix I. The Headquarters of the Institute is at Mandapam Camp with (i) Fishery Biology Division (ii) Marine Biology and Oceanography Division and (iii) Fishery Survey and Statistics Division. The Institute has five sub-station establishments at Bombay, Karwar, Kozhikode, Ernakulam and Madras and eight Research Units at Mangalore, Cannanore, Vizhingam, Tuticorin, Veraval, Waltair, Minicoy and Port Blair (Andamans) and 27 Research Survey and Field Centres.

Staff Strength and Functions

2.2. The total sanctioned staff strength both at the Headquarters and the 40 out-station establishments together is 485. The break-up of the sanctioned and the actual strength of the Institute (scientific personnel and administrative personnel) as on 1st April, 1965, 1st April, 1966 and 1st April, 1967 has been stated to be as follows:

	1-4-1965		1-4-1966		1-4-1967	
	Sanc-tioned	Actual	Sanc-tioned	Actual	Sanc-tioned	Actual
Scientific	155	166	155	128	154	137
Non-Scientific and Technical	117	98	119	59	120	105
Administrative	48	47	48	48	50	48
Class IV	153	147	161	154	161	154
	473	408	483	429	485	444

2.3. The Committee have further been informed that out of 485 sanctioned posts, 389 were permanent and 96 are temporary.

Vacant and Temporary Posts

2.4. In a statement furnished to the Committee, it has been stated that one post of Senior Research Officer for Oceanography (Scale Rs. 700—50—1250) has remained vacant with effect from 4th May, 1964. One post of Assistant Research Officer for Bacteriology (scale

Rs. 400—40—800—50—950) has remained vacant since 8th December, 1958.

Asked why the post of the Senior Research Officer for Oceanography has remained vacant in the Institute since 4th May, 1964, it has been stated that the case was referred to Union Public Service Commission for recruitment action in May, 1964 but in May, 1965 the Commission intimated that no suitable candidate was available and, therefore, a fresh requisition was made in April, 1966 by the Ministry to Indian Council of Agricultural Research on account of contemplated transfer of the Institute to Indian Council of Agricultural Research. In September, 1966 the vacancy was withdrawn from Indian Council of Agricultural Research and again advertised through Union Public Service Commission. It has further been stated that a candidate has since been selected by the U.P.S.C. and the offer of appointment has been sent to him in August, 1967.

As regards delay in the recruitment of an Assistant Research Officer for Bacteriology since 8th December, 1958, it has been stated that in August, 1959, the Ministry ordered the Institute not to fill up the vacancy without their prior approval since the officer concerned who was officiating in the post was transferred to Central Institute of Fisheries Technology, Ernakulam. In evidence the Director of the Institute has stated that marine bacteriological work is a very important piece of work. It requires certain amount of facilities and it is extremely difficult to get those facilities for an isolated post of Bacteriologist. It was therefore thought best to keep the post in abeyance till such time as they got certain laboratory facilities etc. Asked why the post was kept vacant for 9 years and not surrendered when there was no present need for that particular type of work, the Director has stated:

“About 20 years ago when the Institute was started certain posts were suggested and this was one of the posts and in the light of the experience we had, we thought it not good to fill it unless we have a good bacteriologist. It is better not to have a person of that type and so in the interest of economy and other things we thought it best not to appoint any one.”

2.5. The Committee are unhappy to observe that there has been a gap between the sanctioned and actual strength of the scientific staff of the Institute from year to year. The Committee are also unhappy that the post of Assistant Research Officer for Bacteriology had been kept vacant for nine years even when it was realised that there was no possibility of getting a good Bacteriologist. The delay of three years in filling up the vacancy of the Senior Research Officer

for Oceanography also appears to be indefensible. The Committee need hardly emphasise that the continuance of a large number of vacant posts is likely to have deleterious effect on the smooth functioning of a research institute. The Committee hope that the Indian Council of Agricultural Research, to which the Institute has now been transferred, would take note of the present position and take energetic steps to fill up the vacant posts.

2.6. The Committee trust that the Institute would not keep a large number of temporary staff for unduly long period and that the incumbents would be confirmed as soon as they fulfil the necessary conditions.

2.7. As regards scientific personnel *vis-a-vis* administrative staff, from the statement given in para 2.2 ante, it will be observed that as against an actual strength of 242 scientific and technical personnel in the Institute, there were 202 administrative and Class IV staff as on 1st April, 1967. In the opinion of the Committee in research institutions the emphasis should always be more on the scientific staff and less on the administrative and ministerial staff. It is, therefore, desirable to fix some norms and ratios between the scientific and technical staff on the one hand and administrative and ministerial staff on the other.

Functions

2.8. It has been stated that the entire work of the staff for the whole of India regarding recruitment, promotion, confirmation, transfer, relief, etc., drawal of pay and allowances and its remittance to out-stations staff, procurement and supply of articles including furniture, etc. is being attended to in the Headquarters office at Mandapam Camp. The Library of the Institute is also located at the Headquarters station. The periodical and other scientific reports of the staff are processed and finalised at Headquarters. The Institute also has a workshop of its own and Carpentry Section.

2.9. The Committee have been informed that the Director of the Institute is the ultimate authority being head of the Department for administrative work as well, and he is vested with powers of Head of Department delegated under the Delegation of Financial Powers Rules. There are two officers in the General Central Service Class II (Gazetted), viz. Administrative Officer and Accounts Officer to assist the Director in the day to day administrative work of the Institute. It has been stated that the Administrative Officer has to bear with heavy responsibilities of looking after the work of the four sections viz. Administrative Section, Stores Section, General

Section and Library in addition to the watch and ward and Guest House. He is also O.&M. and Local Vigilance Officer as nominated by the Director. All these items of work and responsibility are too many for a single officer to fully and satisfactorily accomplish. An additional senior post of Administrative Officer in the scale of pay of Rs. 400—950 has since been proposed in the Fourth Five Year Plan Scheme. The Accounts Officer of the Institute also has to look after multifarious duties of the accounts branch, such as budget, reconciliation, drawal of pay and allowances and its disbursement etc. for the nearly 485 posts in the Institute in addition to other routine work assigned to him and hence a higher post of Accounts Officer in the scale of pay of Rs. 590—900 is felt to be essential for the Institute. There are also three motor vehicles at the Headquarters of the Institute and four vehicles at the subordinate establishments at various centres. Motor Boats and Launches are also provided at Headquarters and some of the subordinate establishments. Some of the subordinate establishments at out-stations like the sub-stations at Ernakulam, Kozhikode, Bombay have got larger number of staff, 84, 32 and 24 respectively, and the proposal for decentralising to some extent and the work relating to the Administration, Accounts and Stores of the Institute could not be carried out for want of sufficient ministerial and supervisory posts/staff such as Superintendents, Head Clerk, Accountant, Cashier, Senior Clerks, Junior Clerks etc. The Deputy Director who is stationed at Ernakulam is in charge of the supervisory work of the scientific staff in addition to being officer-in-charge of the Sub-station.

The Committee have been informed that creation of the following administrative, ministerial and other general posts have been requested for under the Fourth Five Year Plan as the existing administrative posts are very inadequate compared to the scientific and technical posts.

Plan Establishment

Senior Administrative Officer (400—950)	..	1
Artist Senior (130—300)	..	1
Artist Junior (110—180)	..	2
Senior Mechanic (130—300)	..	2
Senior Librarian (325—575)	..	1
Library Assistant (110—180)	..	1
Superintendents (350—475)	..	2
Chief Storekeeper (350—475)	..	1
Head Clerk (210—380)	..	1

Accountant (200—380)	..	1
Stenographer (Grade I) (210—425)	..	1
Senior Clerks (130—300)	..	2
Junior Clerks (110—180)	..	3
Storekeeper Clerks (110—180)	..	6
Estate Supervisor (210—380)	..	1
Driver (110—139)	..	1

Non-Plan Establishment

Senior Storekeeper Clerks (130—300)	..	4
Storekeeper Clerks (110—180)	..	6
Junior Clerks (110—180)	..	6

2.10. It has been represented to the Study Group of the Estimates Committee which visited the Institute in September, 1967 that the present organisational set-up is quite inadequate for its smooth and efficient functioning. The Study Group have been informed that the staff position in both the technical and administrative wings has to be sufficiently augmented by senior Technical Officers at higher levels and senior Administrative staff. The scales of pay also require revision in the light of developments elsewhere as it is increasingly found difficult to attract first rate research personnel.

2.11. The Committee note the organisational set-up and the functions of the Administrative Division of the Institute. The Committee suggest that the Standing Research Committee or the appropriate committee of the Indian Council of Agricultural Research may conduct a review of the present staffing pattern of the Institute with a view to locate the deficiencies in the working of the Institute in the various Divisions and suggest suitable remedial measures. The Committee also suggest that there should be an annual review of the staff position of the Institute by the Director as well as by the Council.

Flight of Research and Administrative staff from one Institute to the other.

2.12. It has been stated during evidence that the Institute is not getting first-rate men in the lower grades, the reason being that the pay-scales are very low. The pay scales in the colleges and research institutions other than those of Fisheries have gone up. The Fisheries Institutes are getting only people who are rejected and who could not get any job elsewhere. For the future of research organisations, this is not a very happy situation. It is absolutely necessary that at the lower levels, the pay scales should be kept at par with those of the entrants in a comparable research institutions or

educational institutes. It has also been represented that the pay-scales of top grades have not been revised for a long time. Even the scales of the Directors of the Institutes have not been revised for the last 20 years or so. Naturally, the people of right calibre are not attracted towards the fisheries institutes. Even those who join, leave the institutes as soon as they got higher pay-scales elsewhere.

2.13. Asked to state the number of research staff who have left the Central Marine Fisheries Research Institute and its Sub-stations during the last three years, it has been stated that the number is 35. The details of the staff who have left the Institute together with reasons therefor may be seen at Appendix II.

2.14. In view of the fact that the administrative control of the Central Marine Fisheries Research Institute, Mandapam Camp has been transferred to the Indian Council of Agricultural Research with effect from 1st October, 1967, the Committee also heard the views of the Director-General, Indian Council of Agricultural Research in regard to the organisational set-up of the Institute, as also matters relating to research. Asked to state what would be the best working arrangement in the Institute in so far as the relationship between the scientist and the administrator is concerned, the Director-General, Indian Council of Agricultural Research has stated that from his experience he would say that one has to choose between two extremes—one is the scientist trying to do everything himself, in which case he gets clustered up with file work, and the other is that the scientist should not do any administrative work at all. But in the latter case the difficulty would be that important decisions may be taken without his being involved in it. So the choice has to be made between the two. It should be clear that the Director of such an Institute is the more important person and the efficient working of an Institute demands on his being a good scientist and his being able to give a guidance to the Institute so that it functions well.

As regards the staff, the Director-General has stated that he hopes to improve the pay scales of the scientific staff concerned and to give them better working conditions. With regard to recruitment of scientific personnel, the Director-General has stated that the Indian Council of Agricultural Research has its own expert panels which have been modelled on the lines of the Union Public Service Commission. They have preserved all the good qualities of the Union Public Service Commission and they have tried to obtain the very best people and the scientists are assessed for their real worth.

2.15. The Committee note with concern that 35 persons have left the Institute and its various Sub-stations during the last three years due principally to unfavourable pay-scales and meagre chances of

promotion. The Committee feel that similar situation may be prevalent in other institutes dealing with fisheries research. The Committee have no doubt that the frequent flight of personnel from one institute to another seriously affects the quality of research. The Committee, however, are glad to note that the Indian Council of Agricultural Research has proposals to improve the pay-scales of the scientific staff and to give them better working conditions. The Committee hope that the Council would lose no time in reviewing the pay-scales of scientific staff prevalent in the fisheries research institutes on the lines of the recommendations made by the Committee in para 87 of their 75th Report (Third Lok Sabha) on the Ministry of Food and Agriculture (Department of Agriculture)—Indian Council of Agricultural Research.

Chances of Promotion

2.16. Professor Hickling in his report on the Central Marine Fisheries Research Institute has observed:—

“The present distribution of senior and junior posts shows that result of recent expansion of staff (apart from the Director) there are only three senior posts (Research Officers, Senior Scale) and eight intermediate posts (Research Officers—Junior Scale) to 79 junior posts (Assistant Research Officers and Research Assistants). This has two results: firstly, there must be difficulties in the supervision of the work of junior staff, and secondly, there are poor prospects of promotion, which must handicap recruitment.”

During the course of evidence the representative of the Ministry has stated that there are now one post each of Director and Deputy Director, 14 intermediate posts of Class I and 106 junior posts which means that the ratio is now 1:5. He has admitted that although the ratio has been improved but still it is on the high side.

2.17. In the opinion of the Committee, unless there are suitable channels of promotion for the various grades of officers and staff, they are likely to lose interest in their work and this will ultimately affect adversely the smooth working of the Institute. The Committee, therefore, feel that to give impetus to the scientific and other staff there should be a provision for creation of intermediate/selection grade posts. The Committee also suggest that the question of giving suitable incentives for meritorious work to the scientific and technical personnel may be examined.

B. Decentralisation of Work

2.18. It has already been stated that the entire administrative work of the staff for the whole of India is being attended to in the Headquarters office at Mandapam Camp.

2.19. The Committee have been informed during evidence that this administrative set-up is very good, because of the senior scientists at the outstations are burdened with extra administrative work, they are likely to overlook their scientific work. The work has also been speeded up after the Institute has gone to the Indian Council of Agricultural Research.

2.20. About the financial powers of the officers-in-charge of the outstations, it has been stated that officers-in-charge are entitled to spend upto Rs. 10/- in respect of recurring expenditure per month and Rs. 100/- for non-recurring expenditure. In addition, they can also spend on the purchase of specimens of fish, etc. They are, however, restrictions for certain matters which were imposed as a result of various economy measures of Government. The Government do not generally encourage local purchase by Sub-stations. For example in respect of purchase of stationery, a ceiling of Rs. 5/- has been imposed. The representative of the Ministry, however, was of the opinion that the matter should be constantly reviewed because limits fixed at a particular time ceased to be relevant at another time.

2.21. The Committee feel that centralisation of administrative work relating to pay, allowances, leave, promotion, etc. of the staff employed in the Sub-stations/Units/Centres, at the Headquarters of the Institute at Mandapam may lead to certain amount of delay resulting in hardships for the staff. The Committee would suggest that the Indian Council of Agricultural Research may examine how best an improvement can be brought about in the present situation. The Committee consider that the financial powers of the Officers-in-Charge of the Sub-stations are inadequate. They suggest that the question of enhancing these powers may be considered so that Officers-in-Charge may be able to take decisions on the spot and approve items of expenditure without referring to the Headquarters every small item.

CHAPTER III

RESEARCH

A. Research Programmes

Research Programmes

3.1. The Committee have been informed during evidence that the research programmes are formulated and scrutinized by the Standing Fisheries Research Committee every year. The Committee is headed by the Joint Commissioner for Fisheries and there are representatives of the universities and State Fisheries Departments in it. A representative from Council of Scientific and Industrial Research is also invited to the meetings.

3.2. The Committee have been further informed that the number of projects taken up by the Institute is 18 and are in progress for the last five years. The details of these projects may be seen at Appendix III. List of the projects to be taken up from 1967-68 onwards may be seen at Appendix IV.

3.3. Asked whether these projects would continue now that the Institute has come under the control of Indian Council of Agricultural Research, the representative of the Ministry has stated that there is no reason to believe that the Indian Council of Agricultural Research would not continue the research. The main emphasis in Indian Council of Agricultural Research is to link up the field with the research. It is upto the Indian Council of Agricultural Research to review the projects every year and make such improvements as they like. The Indian Council of agricultural Research would now be controlling all coordinated research. The representative of the Indian Council of Agricultural Research has added that it would be unscientific for the Council to make any change just for the sake of change. The schemes and projects already devised by the experts would continue. There are scientific panels in the Council which consider the new schemes on *ad hoc* basis. The Director of the Institute would have a say in matters relating to the Institute. The Fisheries Adviser to the Government would also be associated with the scientific panels. He has assured the Committee that there would be no delay in implementing the projects which have already been undertaken by the Institute.

3.4. Asked whether he envisaged any difficulties with regard to the quantum of research work in fisheries, the representative of the Council has stated that more funds would be required. The Indian Council of Agricultural Research would now take more interest in fisheries. It has also to evolve new procedures for getting the best results.

3.5. Asked whether there is any machinery to ensure that the research programmes are completed within the stipulated time, the representative of the Ministry has stated that for a research of the type undertaken by the Institute, stipulation of time is not possible. But it is possible to give a stipulated time for small problems inside a programme.

3.6. In reply to another question, the representative of the Ministry has stated that there are quite a few factors which have hampered the research programme. Firstly, research vessels are not available. There are no colleges or universities where fisheries could be taught as a subject.

3.7. Asked what proportion of the total research effort of the Institute in terms of manpower and money was devoted to basic research and applied research, the representative of the Ministry has stated that the Institute is concentrating on applied research for the exploitation of marine products. Basic research, in his opinion, would have to go to the universities.

3.8. The Committee have no doubt that the research programmes already approved by the Ministry for execution by the Institute would be continued by the Indian Council of Agricultural Research. They, however, would suggest that the economics of those projects which have continued for more than three years should be worked out to see whether it is worthwhile to continue them.

3.9. The Committee feel that the need of the hour is "coordinated research" and its application and they hope that it will be possible for the Indian Council of Agricultural Research to associate the State Departments of Fisheries in an ample and affective measure with the Central projects.

3.10. In view of the fact that initial training in basic research should continue to be with the universities and academic institutions, the Committee would like to suggest that universities of the maritime States may be persuaded to put increased emphasis on the training of researchers in the field of marine biology and, in fact, all fields of research pertaining to fisheries. The question of introduction of

courses in fisheries in the curricula of the universities may be taken up with the University Grants Commission/Inter-University Board.

3.11. The Committee hope that the Council would see to it that the progress of research is not retarded due to paucity of funds.

Research in some of the States

3.12. The Committee have been furnished with information with regard to development of marine fisheries in some of the coastal States of India, e.g. Kerala, Madras, Maharashtra, Gujarat and Andhra Pradesh. So far as Kerala is concerned, it has been stated that Marine Survey Station, Marine Biological Station and Technological Station are functioning in the State. A 50 ft. research vessel has been launched to carry out oceanographic research by the Department.

3.13. The Madras Government has taken up the marine biological research with special attention to the problems of the commercially important fishes. It has established a Technological Station at Tuticorin. The marine biological station for fisheries and technological research problems are worked out in the respective research stations. The future plan for development of fisheries in Madras State will *inter alia* provide the taking up deep sea fishing with the use of trawlers.

The Madras Government has also established training centres for fishermen in all the maritime districts for training them in mechanised and modern methods of fishing, principles of navigation and handling of engines and an inland centre at Mettur Dam.

3.14. So far as Maharashtra is concerned, it has been stated that during the Second Five-Year Plan period a Marine Biological Research Station was opened at Ratnagiri by the Government of Maharashtra. That Government also implemented "pilot project in deep sea fishing scheme" under which fisheries survey was contemplated. During the Third Plan period also an area of about 9,000 sq. Kms. of sea upto 30 fathom depth was surveyed in Colaba and Ratnagiri Districts.

The Research Station at Ratnagiri carried on work on Tuna and Prawn fisheries. In the future planning for the development of fisheries of Maharashtra, one of the directions *inter alia* would be special project for exploitation of the off-shore fisheries on a large scale.

3.15. The Gujarat State has established a Marine Biological Research Station at Okha at an estimated cost of Rs. 15 lakhs. The building for the station is likely to be completed shortly. It is also envisaged to construct research vessels which would be attached to the station for conducting practicals. For locating future resources and studying effectiveness of different kinds of fishing gears 3 vessels were being operated. In addition to these a small Research Wing has been set up at Jamnagar under the guidance of a Research Officer. The research on bionomics of food fishes and on causes of depletion of pearls is being conducted at Jamnagar in addition to the studies on the utilisation of products like marine algae, fresh water fishes of South Gujarat, etc. The Research Station at Okha was established for undertaking research work on marine biology, shell fishery, biological statistics, oceanography etc. For the future schemes of development the State Government have a scheme for exploratory survey work. The range of operation will be limited to 50 fathoms and the scheme was expected to yield factual and objective assesment of fishery resources. The State Government had made a beginning during the Third Plan period for the collection of fishery statistics by creating a small statistical unit at the headquarters. They propose to strengthen this statistical unit to fill up the gaps relating to (i) statistics on potentialities of fisheries including survey of resources, personnel engaged in fishing industry, etc. (ii) statistics on the projection of fish and on processed products such as shark liver oil, fish meal etc., (iii) statistics on utilisation, demand and supply of fish, markets arrival, trade and prices.

3.16. It appears from the information furnished to the Committee that some of the research work being done by the Central Marine Fisheries Research Institute at Mandapam Camp e.g. survey of fisheries resources, researches on marine biology, oceanography, etc. are also being done in some of the maritime States. The Committee would suggest, therefore, that a thorough study of the work being done at the Institutes set up by some of the States should be made so as to ensure that there is no duplication of efforts and expenditure on identical schemes. Since the basic idea in transferring the Central Marine Fisheries Research Institute and two other research institutes to the Indian Council of Agricultural Research is to have integrated and coordinated research work under one organisation, the Committee trust that the Council would look into the matter of co-ordination of research work undertaken by the Central and State Research Institutes. The Committee hope that the State Research institutes would also be provided with adequate finances by way of timely grants and loans so that there is all-round development of research relating to fisheries.

Grants for research programmes

3.17. In the report submitted by Dr. Hickling, it has been stated that many agencies in India are concerned with marine research work in the wider sense, besides the Central Marine Fisheries Research Institute. The States of Kerala, Madras and Maharashtra, for example, have fishery research stations. Then some of the Universities have marine biological stations, and there is a University Department of Marine Biology and Fisheries in Kerala. The University Grants Commission, which is under the Ministry of Education, comes in because it gives grants-in-aid to such stations, and the Council of Scientific and Industrial Research and Government of India also give research grants for hydrological or marine biological work. The Indian Council of Agricultural Research has made a 5-year research scheme for research by the University of Andhra Pradesh into the hydrology and biology of the Godavari Delta, including work on the prawns and other bottom fauna and the plantation.

3.18. Clearly, the doing of so much work by so many agencies involves the risk of considerable duplication of research. This is not always undesirable. For example, basic production by the 14 C technique and by other means could be done with advantage at many points round the coast. While the work done by the Universities is mainly marine biology and other studies such as are proper to a University, such work shades over into fisheries when, for example, the life histories of fish, crustacea, and molluscs are the subject of research; these are also a part of the field of work of the Central Marine Fisheries Research Institute.

3.19. When this question was raised during evidence, the representative of the Ministry stated that even though the Institute has gone under the control of the Indian Council of Agricultural Research, some sort of coordination has to be done so as to avoid duplication of research as various institutions, e.g. University Grants Commission, Council of Scientific and Industrial Research, Indian Council of Agricultural Research, etc. provide grants simultaneously for the research schemes undertaken by the Institute.

3.20. The Committee would urge that a suitable method should be devised for channelising the grants through one agency, i.e. Indian Council of Agricultural Research, so that the unnecessary duplication and overlapping in the research work could be avoided and proper control exercised over the progress of various research schemes.

B. Research Vessels

Need for a Research Vessel

3.21. The Committee have been informed that the need for a research vessel in connection with the marine fisheries investigations in India was recognised from the very inception of the Institute but various practical difficulties stood in the way of procurement of one. In the early stages the investigations were confined mainly to the coastal belt availing of the existing types of crafts. Gradually the work was extended wherever possible to areas further out with the help of trawlers of the Deep Sea Fishing Station. In 1957, oceanographic investigations were initiated in cooperation with the Indo-Norwegian Project and M. O. Kristensen, one of the fishing vessels of the latter was made available for the purpose. Research cruises were started in September, 1957 but due to the unsatisfactory condition of the vessel it was condemned and replaced by its sister vessel *R. V. Kalava*. Since the end of 1957 the vessel had been making regular oceanographic cruises along the west coast of India till 1961. Towards the end of 1961, a modern research vessel *Varuna*, specially built in Norway for oceanographic investigations was made available by the Indo-Norwegian Project and has been operating regularly since then.

3.22. Commenting upon the need of research vessels for the Institute, Dr. Hickling, in his Report has stated as follows:—

“But the greatest items of inadequacy in the research progress of Central Marine Fisheries Research Institute are research vessels. In my opinion these research vessels are needed, namely, one for the sardine and mackerel coast from Karwar south, one for the demersal fisheries of the north west, which have great potential and one for the whole of the east coast.

The *Varuna*, the generous gift of the Norwegian Government has so far been under the control of a Committee with strong local interests, but I understand that during the present year she will be put at the disposal of the Indian Government. I submit that she should be under the control of Central Marine Fisheries Research Institute if the Norwegian Government agrees. Central Marine Fisheries Research Institute has better resources of staff than the States, and if my suggestion of a top-level Fisheries Research Council is adopted, any State interest in the operations of the ship can be noted. She is a very fine ship, well-equipped in all respects for oceanographic, demersal and fishing work. She is too large for methods such as drift-netting, though she can operate a purpose

seine. But she carries a motor boat which could be used inshore as a work boat for such fishing methods as drift netting and long lining. She is built to cope with far more severe weather conditions than she is likely to meet within the Indian waters, and should be well able to continue research, during the south-west monsoon, on the sardine and mackerel coast, a time when hydrographic, plankton and fish-finding work are of special interest. She should run a net work of observations for out into the Arabian Sea. The only improvements one could have wished in this splendid ship are a slightly greater length and a more power asdic.

For the demersal fisheries of the north-west, a 105 ft. stern-trawler type of vessel is needed fitted with fish finding echo-sounders. For the whole of the east-coast, a larger vessel is needed, of about 120 ft. equipped for stern trawling, with a work-boat for pelagic fishery and both asdic and fish finding echo-sounders. I will not go further into details because there is plenty of experience available about research vessels, and skilled and specialised advice.

The need for research vessels is all the greater because the present off-shore survey vessels are past their best and nearing the end of their useful lives. Their record of un-serviceability speaks for itself. They cannot much longer be relied on for even the very limited amount of assistance they give to the staff of Central Marine Fisheries Research Institute in collecting material and it seems impossible to use them for oceanographic work. In any case, they are no substitute for research vessels whole time at the disposal of the research staff.

The cost of the two additional research vessels proposed, and their equipment, will be great but the value of the fisheries of India, and even the value of the export trade in fish and prawns, which brings in considerable foreign exchange, fully justifies expenditure which can only result in a further expansion of these fisheries."

3.23. The Committee have been informed during evidence that the specifications of the type of the research vessel that the Institute would like to have, have been worked out and proposals had been made in this regard. The matter has been examined in consultation with the Ministry of Finance and it has been decided that the research vessel is necessary.

3.24. The Committee have been further informed during evidence that the requirements of the Institute have so far been met.

by the research vessel "Varuna" belonging to the Indo-Norwegian Project. The programme of "Varuna" is being actually determined by the Director of the Institute and the biologists who go on board the vessel are scientists of the Institute. However, it does not meet the requirements of the Institute fully. It is a very unsatisfactory situation.

3.25. Asked whether the research vessels could be built in India or have to be imported, the representative of the Ministry has stated that in his opinion, about 10 or 11 of the research vessels fitted with laboratories have to be imported.

3.26. The Committee have been further informed during evidence that the Swedish Government are giving two vessels as gift. They have already started the construction of these vessels and they would be ready in the course of next year (1968). The Government of India have been asked to make arrangements to send some of the crew so that they could come along with the vessels from Sweden.

The Committee has been informed by the Ministry at the stage of factual verification of the report that:

"The position in regard to the research-cum-training Swedish vessels is that the detailed specifications of the vessels were intended to be drawn up by Swedish Experts in consultation with the Government of India in accordance with requirements. The requirements were discussed with an expert team which came to India in June, 1966. After a review of the various requirements of fisheries development in consultation with Director CMFRI it was decided that the vessels should be used for training institutions. Designs were drawn up accordingly in August, 1966. There was no decision at any stage that either of the vessels should be given to the CMFRI. The question of providing the CMFRI with a vessel was being simultaneously considered. Various alternatives were considered at different stages. The feasibility of one of the Swedish gift vessels being given to the CMFRI was also considered in August, 1966 before a decision was taken that the vessels should be used for training instead of for research. Consideration of the type of vessel required for the CMFRI continued separately thereafter. At one stage of this consideration; the Director of the CMFRI, in a letter dated the 30th November, 1966 indicated that the Institute would not find a vessel of 90 ft. suitable for the purposes

of the Institute and suggested that a vessel of the type of *La Pelagia* (105 ft. in length as against 90 ft. length vessels offered by Sweden) should be obtained for the Institute."

3.27. The Committee are constrained to observe that it has not been possible for Government to provide the Central Marine Fisheries Research Institute with its own research vessel even though its need in connection with marine fisheries investigations in India was recognised from the very inception of the Institute. They are all the more unhappy to note the indifference shown by the Government, even though they were aware that "Varuna" could not meet the requirements of the Institute fully and the present arrangement is very unsatisfactory.

3.28. The Committee would like to be assured that a research vessel suitable for the purposes of the Institute will be obtained and supplied to the Institute at an early date.

3.29. The Committee feel that it should be possible for the Ministry to find enough foreign exchange for importing the minimum number of research vessels required if the Government are convinced that (i) these could not be built in India; and (ii) that there is urgent need for research vessels for fisheries development in the country. The Committee strongly feel that inadequate measures of this nature in the matter of research render the whole project a waste of men and material. In any case the Committee would like to stress that the provision of a proper research vessel is an essential pre-requisite for a Research Institute on Marine Fisheries.

Budget Provisions

3.30. It has been stated that an amount of Rs. 15,00,000 was provided in the budget for the year 1966-67 for the construction of a research vessel for the Institute. However, this amount was surrendered as the suppliers required 12 months' time for taking up the construction work. This time could not be agreed to as the Expenditure Finance Committee had not cleared the proposal and that orders for the vessel could not have been placed in any case.

The Committee have been informed during evidence that a similar sum has been provided in the year 1967-68 in the hope that the construction could be started. But again it has been delayed and even this money might have to be surrendered.

3.31. The Committee realise that the question of constructing a research vessel for this Institute is linked up with the overall question of availability of indigenous capacity vis-a-vis imports.

However, in the present context, they need hardly point out that the budget provisions should be made on a realistic basis as over-budgeting is as bad as under-budgeting. The Committee feel that before providing the sums in the budget for the year 1966-67 and again in the year 1967-68, the Government should have ascertained whether the supply of the vessel was at all likely to materialise in the course of one year.

C. Fishery Survey and Statistics

Sample Survey

3.32. It has been stated that Fishery Survey and Statistics Division of the Institute has successfully launched, and is implementing a full fledged and most suitable sample survey to obtain reliable monthly and annual estimates of fish landings—species and group-wise for each maritime state. The fisheries survey being done is based on space-time stratified sampling design which has been evolved after years of field trials and is best suited for the Indian conditions where fish landings take place at innumerable landing centres at almost all hours throughout the year. Periodic surveys at 5 year intervals of census figures on the number of fishing villages, fishermen population, craft and gear are also being made by the survey staff of the Institute on a complete enumeration basis. In fact, this Institute has been the only source for the supply of these basic figures to various organisations and industries in the country.

3.33. In a written note furnished to the Committee it has been stated:—

“Estimates of production of fish from the inland sources are furnished by the State Governments to the Fisheries Division annually where these are aggregated for framing the All India estimates. The States are furnishing these estimates without any variety or source-wise break-up. Although the exact basis on which these annual statistic are collected and compiled in each State is not available, broadly these are compiled by the field agencies of the Department of Fisheries in the State and are largely based on factors like lease amounts, issue of licences, departmental exploitations, market arrivals, transactions of cooperative societies etc.”

It has further been stated that the question of effort in the work relating to the estimates of marine production by the Central and State agencies is engaging the attention of the Fisheries Division of the Ministry for some time past. Recently the Technical Com-

mittee on Fisheries Statistics in the Department of Statistics of the Ministry of Food & Agriculture considered this problem while reviewing the current position of statistics of fish production. That Committee has suggested that a critical review of the work done by the Directorate of National Sample Survey, Central Marine Fisheries Research Institute and States may be made and a comprehensive note prepared for consideration by the Technical Committee.

3.34. The Committee have been informed that at headquarters at present there are one senior Research Officer, who is in charge of the Fishery Survey Division of the Institute, and an Assistant Research Officer to assist him in co-ordinating the work of the fishery survey in the collection, processing and compilation of the data. Training in the collection of the fishery survey data for the newly recruited personnel for this purpose is also being given at headquarters.

3.35. The Committee note the present arrangements for collection of data regarding production of marine fish on an All-India basis. They also note that statistics are also collected and compiled by various maritime States. The Committee consider it desirable that there should be a single agency for the collection of data regarding marine fisheries and overlapping of effort in this direction should be avoided. The Committee hope that the Technical Committee on Fisheries Statistics would be able to offer constructive suggestions in the light of the review of the work done by the National Sample Survey, Central Marine Fisheries Research Institute and the State Governments.

Staff

3.36. Dr. Hickling in his report has stated that the Fishery Survey and Statistics Division should be headed by a Deputy Director, with two posts of Research Officers (Senior Scale) under him.

During evidence, the representative of the Ministry has stated that the staff in the Fishery Survey and Statistics Division has been increased as suggested by Dr. Hickling.

3.37. The Committee, however, find that the staff strength of the Fishery Survey and Statistics Division has not been augmented on the lines suggested by Dr. Hickling. The Division is still headed by a Senior Research Officer only. They suggest that the staff position of the Division may be reviewed further.

D. Liaison

Liaison with other Fisheries Research Institutes

3.38. Asked to state the nature of liaison and coordination between this Institute and Deep Sea Fishing Station, Bombay, Indo-Norwegian Project and other Institutes set up by the Central Government as well as various State Governments, the Ministry in a written note submitted to the Committee has stated as follows:—

(i) Liaison between the Institute and Deep Sea Fishing Station

The two Institutes work in close coordination. The scientific workers participate in the operations and collection of data, besides studying in detail the data on fish landed, effort put in, etc. The Deep Sea Fishing Station and the Offshore Fishing Stations under it have to carry out exploratory fishing as per programme given by the Central Marine Fisheries Research Institute.

(ii) With Indo-Norwegian Project

In the pioneering work on the marine biology and oceanography of Indian waters that this Institute initiated a decade ago and has maintained uninterrupted ever since, the close liaison it has had with the Indo-Norwegian Project has been a prominent feature. In fact the Indo-Norwegian Project had provided the Institute with the necessary ocean-going vessel—at first “Kristensen” and then “Kalava” fishing vessels converted into research vessels, and later “Varuna” a well-equipped modern research vessel, built in Norway for the purpose of these studies. In the early years the charting and programming of the cruises as well as the performance of scientific observations and collection of samples on board and later analysis of these in the laboratories, were all done by the scientific personnel of this Institute. Later the programming of the cruises was taken over by an All-India Committee; however, the actual collection of data on board and then analysis in the laboratories continued to be done by the Institute, while the Indo-Norwegian Project provided the facilities of the vessel and the crew.

(iii) With other Central and State Government Institutes:

There is exchange of quarterly annual reports and scientific papers and journals by which each has been kept informed of the programmes and progress of the other, in addition to the local committees for consultation constituted in some States. For the rest, as and when the need arises mutual consultations are done on individual or unit level.

3.39. It has further been stated that the question of over-lapping or duplication of research work by the various Central and State Institutes is being kept in view.

3.40. The Committee have been informed that besides the co-ordination at the institutional levels, the Standing Fisheries Research Committee also coordinates the activities of the various research institutions. The work programmes of the Institutes are discussed at the meetings of the Standing Fisheries Research Committee which is presided over by the Joint Commissioner of Fisheries. Problems concerning different research institutes under the Centre and in the States are also discussed by the Central Board of Fisheries. The question of effecting coordination of fisheries research came up for discussion at the second meeting of the Standing Fisheries Research Committee held on 27th and 28th April, 1956, at the Central Marine Fisheries Research Station, Mandapam Camp. Extracts from the proceedings of the meeting are reproduced below:

"The Chairman pointed out that coordination of research activities by the Central, State and University agencies was not necessary but that the Central Government should have the responsibility to secure it. The *ad hoc* Fisheries Research Committee in making a recommendation to this effect had instanced a few cases in which it thought that coordination was urgently needed. Although the State Governments and Universities had accepted this recommendation in principle, it was necessary to see how best this coordination could be effected and invited concrete suggestions in this connection.

Dr. Panikkar recommended the setting up of Regional Committees to discuss marine fisheries programme and to review the progress achieved once in two years at Bombay, Madras, Calcutta, Cochin or Trivandrum. He also suggested that more opportunities should be afforded for fisheries research workers of the States and of the Central Stations to visit each other's laboratories and acquaint themselves with the work that was going on. He also suggested the holding of meetings of research workers on marine or fresh water fisheries at Mandapam and Calcutta Research Stations respectively.

Dr. Bhimachar stated that quite effective coordination existed between the Central Fisheries Research Station and Orissa State. Close cooperation also existed with West

Bengal and Uttar Pradesh. He suggested that the Central Fisheries Research Committee should set up a Fisheries Research Advisory Board. This Board would receive the progress reports from various institutions and review the work done and recommend future planning for every year after periodically visiting different institutions. Coordination of research at the Universities could be taken up at the Inter University Board level. He suggested the setting up of three or four Regional Fisheries Research Coordination Committees for bringing about effective co-ordination between various agencies.

The Chairman enquired if the intention was to set up a Fisheries Advisory Board and, under it, Regional Co-ordinating Committees on which the States and Universities of the region will be represented. Dr. Bhimachar agreed.

Shri Chacko did not think it was necessary to set up any further Committees when there was already close co-operation and coordination existing. He, however, felt that there may be coordinated plan of work on some suitable problems on which collaboration between the workers of the States and Central Stations could be arranged.

Dr. Sarbahi considered that there should be Regional Committees to review and plan the fisheries research work.

Dr. Bhatia stated that although coordination and collaboration existed in certain places between the research workers of the States and the Centre, it could not be denied that there was a lack of understanding and co-operation in other places. Madras Government had asked for specific suggestions for bringing about closer coordination. Considering the work at present carried out in India, the country may be divided into three regions, i.e. (a) West Bengal, Bihar, U.P. and Assam on the east; (b) Madras, Travancore-Cochin, Andhra and Mysore in the south; and (c) Bombay, Saurashtra and Hyderabad on the west. He suggested that the Central Fisheries Research Committee may perhaps be split up into three sub-committees which may visit these three regions once in a year or six months, co-opt research workers representing the region concerned and after, actually inspecting the work and having detailed discussions, arrive at some sort of coordinated or collaborated programme in

each region and assign work according to the facilities available at the various research centres. Representatives of the Centre, States and the Universities may be co-opted in each region.

The Chairman stated that he was not in favour of too many committees and boards nor of splitting up the present Committee as it was sufficiently small. He, therefore, agreed with Dr. Bhatia's suggestion that the Central Fisheries Research Committee may meet in turn in various regions and co-opt members from that region, though it will be difficult to find sufficient time to undertake detailed inspection of various research centres in each region. It would be better, perhaps, to obtain all the necessary information in advance from each region where the Committee meets."

The Standing Fisheries Research Committee has recommended that meetings of the committees may be held in future in different regions and while holding the meetings, members from State Governments or Universities that undertake active fisheries research in those regions, may be coopted. The committee should also request those Governments and Universities, etc. to furnish detailed notes on their research programmes.

3.41. The question of coordination of research efforts was also discussed at the 12th meeting of the Standing Fisheries Research Committee (May, 1965). It was suggested at the meeting that in each State a Sub-Committee should be formed to achieve better coordination and quicker results.

3.42. The Committee note that liaison and coordination is being maintained by the Institute with the Deep Sea Fishing Station, Bombay, Indo-Norwegian Project, and other Institutes set up by Central as well as various State Governments. There is, however, need to intensify the efforts so that any overlapping or duplication of research work may be avoided in the initial stages of the operation of any scheme. The Committee also suggest that the proposal of constituting a Coordination Committee in each State, as made at the meeting of the Standing Fisheries Research Committee (1965), may be actively pursued in consultation with the State Governments.

E. Evaluation

3.43. It has been stated that the work of the Institute has been evaluated by foreign experts twice. A committee headed by Dr. W. H. Rich of Stanford University visited the Institute headquarters

and sub-stations, studied their working and submitted a report in 1954 favourably commenting on the work carried out at the Institute. In January, 1962 the Government of India invited Dr. C. F. Hickling, Expert under Colombo Plan to study the working of the Institute and evaluate the progress made. Dr. Hickling submitted his report in February, 1962. The report was examined in consultation with the Director of the Institute and this examination was completed in March, 1963. A statement indicating the recommendations and action taken thereon by Government may be seen at Appendix V.

3.44. Asked during evidence, whether the decisions arrived at by the Ministry on the recommendations made by Dr. Hickling were communicated to the Institute, the representative of the Ministry has stated, "There is nothing on the file to show that, but the decisions, having been accepted, must have been followed up." According to the representative of the Institute, "The Report has not yet been officially released." Later the Ministry has also admitted in a note submitted to the Committee that, "There was no formal communication to the Director communicating the decisions of Government on various recommendations."

3.45. The Committee regret to note that although Dr. Hickling submitted his report on the working of the Institute as far back as 1962, the Government have not yet taken action on some of the recommendations contained in the report. The Committee also regret that the decisions arrived at by the Government on the recommendations made by Dr. Hickling were not formally communicated to the Director of the Institute resulting in unnecessary confusion and misunderstanding. The Director being the head of the Institute should have been taken into confidence and consulted in the matter of the implementation of the recommendations. The Committee hope that the Indian Council of Agricultural Research will pay due attention to such of the recommendations of Dr. Hickling as have not yet been implemented.

3.46. The Committee also stress the need for periodical evaluation of work of the Institute by an Achievement-Audit Committee consisting of specialists. In this connection, the Committee would like to invite the attention of the Ministry to the recommendation made by them in para 9 of their 76th Report (Third Lok Sabha) on the Ministry of Food and Agriculture (Department of Agriculture)—Indian Agricultural Research Institute.

F. Marine Biological Association of India

3.47. Towards the end of 1958 the Marine Biological Association of India was established by the Director of the Institute with the

active support and cooperation of his colleagues in the Central Marine Research Institute at Mandapam.

3.48. It has been stated that the object of the Association shall be to create among its members an active interest in the field of marine biological and allied marine sciences: (a) by organising lectures, symposia and seminars on specific subjects, (b) by offering requisite information to research workers and students undergoing training in marine biological sciences, (c) by publishing a journal, which shall be called the Journal of the Marine Biological Association of India, (d) by issuing occasional Memoirs and Monographs, (e) by instituting fellowships and studentships to research workers at the various recognised institutions, (f) by sponsoring and aiding expeditions and (g) by instituting prizes to be awarded in recognition of outstanding contributions towards the advancement of the marine biological sciences from the research workers of India, as funds permit.

3.49. The Journal of the Marine Biological Association of India commenced publication from 1959 onwards, of which 7 volumes have so far been published. This Journal also brings out the results of investigations carried out at the Institute.

3.50. The Marine Biological Association of India held a symposium at Mandapam Camp in January, 1962 on Scombroid fishes. The proceedings of the symposium come to nearly 1400 pages. It is claimed that the contributions from the technical staff of the Institute on this interesting and important group of fishes, about which there was absolutely no information a decade ago, have earned international recognition. It is also claimed that the cost of this publication would come to about Rs 40,000 for which no expenditure was incurred by the Government or any scientific body in India for holding its symposium or for publication of the proceedings.

Another symposium on Crustacea (which included Prawns, Crabs and Lobsters) was organised in 1965. It is estimated that the complete proceedings of the symposium will come to about 2,000 pages. The cost of this is estimated to be about Rs. 65,000 but there was no financial assistance from any organisation anywhere within the country or outside. This symposium on Crustacea has been given recognition by the Food and Agriculture Organisation at a regional meeting.

3.51. To promote the publication of monograph and comprehensive accounts of marine fauna and flora, the Marine Biological Association of India is bringing out a new series—memoirs. It is stated

that steps are being taken to bring out in the near future another 6 memoirs in the series of which the first on the Ribbon fishes of India is under print. It is estimated that the cost of publication of all these would come to about a lakh of rupees. The Association do not propose to seek any aid from any organisation. It is further stated that a symposium on Mollusca the third in the series organised by the Association, will be held at Cochin from 12th to 16th January, 1968. Over 100 contributions have been received from various parts of the world and the proceedings of the same are expected to exceed 1,500 pages.

3.52. The Committee are glad to learn that important work is being carried out by the Marine Biological Association of India at Mandapam Camp, which, it appears to the Committee, is being solely run with the active help and initiative of the Director and staff of the Central Marine Fisheries Research Institute. In view of the importance of the work being done by the Association, which needs no emphasis, the Committee would suggest that the Indian Council of Agricultural Research should give suitable encouragement and financial assistance to this Association which is stated to have already earned international recognition.

CHAPTER IV

EXTENSION AND EDUCATION

A. Extension

4.1. It has been stated that no staff has been provided for the extension work for the Institute and as such the Institute has no extension activities. The Study Group of the Estimates Committee which visited the Institute during September, 1967 have been informed that there is a need for a full-fledged extension wing for the Institute.

4.2. Asked in what way the results achieved by the Institute are being disseminated to the users, the representative of the Ministry has stated during evidence that for this purpose, extension work should be done. Coordination of the extension activities should be at the Centre and the State extension wings should be more active through whom results would be passed on to the field. The Institutes would also be doing some dissemination in their areas. Most of the dissemination would be through publications particularly in the marine fishery.

4.3. Asked whether it would be desirable to establish a sort of close liaison with the field through the Central Extension wing as the extension aspect of the State Governments is not as strong as it ought to be, the representative of the Ministry has stated that they would like to work out such a scheme which is lacking at present. There has been liaison and quite a lot of work has been done by personal discussion at the officers' level, but an extension system could be brought into operation as is being done in agriculture. It has been added that "We would like to improve it (extension work) on the same basis as we have done on the agricultural side of having a proper Extension Wing."

4.4. Asked whether any demonstrations, exhibitions, etc. about the working of the Institute have been arranged during each of the last three years, it has been stated in a written note submitted to the Committee that the Institute took part in the exhibition in connection with the Symposium on crustacea held at Ernakulam in 1965 and also supplied material for the seafood exhibition at Ernakulam. The Institute also organised an exhibition in connection with the celebration of Copper Jubilee of the Institute in 1967.

4.5. The Committee have been further informed that there were Fisheries Extension Units at Mandapam Camp and Gauhati but they were transferred to the Governments of Madras and Assam respectively during 1963. Asked about the reasons for their transference to the Governments of Madras and Assam, the representative of the Ministry has stated during evidence that the State Governments have been attempting to set up extension units and in general this trend has been encouraged. When the State Governments suggested that they might be transferred to them, it was agreed to. The Central Government have no Extension Units at present. The Committee have been informed further that ten Fisheries Extension Units were started in 1956-57 with a view to extending the results of research achieved in Fisheries Research Institutes to the fish farmers. These units conducted demonstrations, publication of pamphlets, group discussions, organisation and training courses, participation in exhibitions, conduct of audio-visual publicity etc. However, as a measure of economy these units were wound up with effect from 31st March, 1967. However, there is an extension unit attached to the Central Institute of Fisheries Technology, Ernakulam.

4.6. The Committee need hardly point out that mere collection of useful information without disseminating it to the users serves no purpose. They regret to note in this connection that "except for casual information, the Institute does not maintain direct liaison with the Industry." They would, therefore, urge that all the Central Fishery Institutes should maintain close liaison and coordination with the users' organisations, associations and industry and pass on the fruits of research and investigations freely to them as well as to fish farmers, fishery operatives, and fish processors so that the information could be utilised for the development of India's fisheries.

4.7. The Committee consider it unfortunate that as a measure of economy the ten Fisheries Extension Units started by the Ministry in 1956-57 had to be wound up on 31-3-1967. Now that the Government is considering the question of strengthening extension work, the Committee would stress the need for establishment of Central Government Extension Units at the earliest possible opportunity, wherever necessary. They would also recommend that a scheme may be worked out by which close liaison and coordination could be maintained between the Central Extension Units and State Extension Units on the one hand and between State Extension Units *inter se* on the other.

4.8. The Committee hope that the extension aspect of the Central Marine Fisheries Research Institute will be looked after adequately

now that the Institute has gone under the control of the Indian Council of Agricultural Research.

B. Publicity

4.9. It has been stated by a leading expert on fisheries that the correct type of publicity will have to be introduced in the fisheries field by the Ministry of Food and Agriculture. Publicity on scientific matters while adding on to the academic knowledge may not substantially help the industry in the field. Therefore considerable publicity of the results of research both marine and inland and technology will have to be brought down to the level of the ordinary public and in an easily assimilable form so that it will be useful to the industry in general. While the scientific journals now being published may continue, it would be necessary to give more emphasis to Bulletins, News Letters and other periodical publications on technology matters as well as on matters of applied nature.

4.10. So far as the Central Marine Fisheries Research Institute is concerned, it has been represented to the Study Group of the Estimates Committee which visited the Institute in September, 1967 that to properly publicise the activities of the Institute it should be provided with its own journal. Permission should also be accorded for the issue of periodic Bulletins. Provision of a rotapress for the Institute would be very helpful in bringing out without delay bulletins and publications like the "Advance Abstracts".

4.11. During evidence, the Committee have been informed that there is a slight difference between the publicity arrangements in respect of this Institute and of some of other Institutes. So far as this Institute is concerned, it is the scientific circles, biologists, etc. who are directly interested in the results achieved by the Institute and it is to these scientific circles that the journals, publications and pamphlets are circulated. The results of the Institute are published in the Indian Journal of Fisheries. Asked whether it has served the purpose, the representative of the Ministry has stated that if there is more material for more than one journal, the proposal to have another journal would be considered. So far as the Rotaprinting Press is concerned, it has been stated that the proposal has been processed in the Ministry for necessary action. The cost of the Press would be about Rs. 10,000. Now the clearance from the Director General, Supply and Disposal has to be obtained. After that it would be provided to the Institute. This would help the Institute in bringing out Bulletins, etc. quickly.

4.12. It has further been stated that the results of the investigations conducted by the Institute are invariably published in scienti-

fic journals mostly within the country (including the Indian Journal of Fisheries published from the Institute for the Ministry of Food and Agriculture with the Director as the Managing Editor), in quarterly and annual reports to the Ministry, which are however circulated to interested individuals and Institutions (Government and private) and also in occasional pamphlets, brochures or Souvenirs published by the Institute on special occasions. The scientific papers from the Institute include not only those that give forth observations or discoveries of a technical nature which are of interest to the fishery industry in general and to fishery scientists in particular and which are essential for the ultimate planning and proper implementation of fishery development programmes, but also contain reports of detailed analysis of monthly and annual estimates of marine fish landings, region-wise as well as species/group-wise, assessment of fishing effort and returns per unit, effort, the results of studies made by exploratory trawling cruises, with estimate of catch and effort and consequent demarcation of the more profitable fishing grounds, etc. which are of immediate benefit to the fishing industry.

4.13. Some of the publications brought out/being brought out by the Institute are enumerated below:—

- (i) Contributions from the Central Marine Fisheries Research Institute from 1960 to 1967 (8 volumes). These contain reprints of articles published by the Scientific staff of the Institute. The number of published contributions is 739 while the number awaiting publications is 92.
- (ii) The Indian Journal of Fisheries.
- (iii) The Fisheries of the West Coast of India.
- (iv) Advance Abstracts of contributions on Fisheries and Aquatic Sciences in India.
- (v) F.A.O. announcement on the World Scientific Conference in the Biology of shrimps and Prawns.

4.14. Asked whether any publications are being brought out in regional languages also, the representative of the Institute has stated during evidence that it is for the Information Departments of the State Governments to bring out publications in regional languages for the benefit of the fishermen. Madras Government, for example, is doing it. He could not say what the position is in other States.

4.15. The Committee need hardly stress that timely publication of Bulletins, News Letters, and other periodical publications on technology can go a long way in bringing home the results of

research and investigations made by the various Research Institutes to the users. The Committee commend the efforts made by the Central Marine Fisheries Research Institute in this behalf. They, however, feel that there is much leeway yet to be made in this matter. They suggest that Government should take suitable steps in this direction early so that the results of research could be brought to the level of people engaged in fishing in an easily assimilable form. One of the ways in which this could be done is to bring out publications in simple regional languages and make them accessible to all concerned. The Committee suggest, therefore, that this question be taken up with the concerned State Governments so that the results of researches and investigations made by various Fisheries Research Institute are taken advantage of by the fishermen, fish processors etc.

4.16. The Committee recommend that provision of a Rotaprint Press for the Institute should be expedited.

4.17. With regard to the suggestion that the Institute be provided with facilities to bring out its own journal, the Committee would suggest that the matter may be examined by the Publication Committee of the Indian Council of Agricultural Research in all its aspects.

C. Training

4.18. It has been stated that the Institute had trained a batch of science graduates in 1949 for taking up fishery work in the different States but the training programme was discontinued as a measure of economy. The Institute, therefore, at present does not provide any regular educational or training facilities except providing the required preliminary training for the personnel newly recruited.

4.19. It has further been stated that the Institute has been recognised by the Inter-University Board of India as a centre for carrying out research leading to Ph.D. and D.Sc. Degrees. Asked about the nature of assistance rendered by the staff of the Institute to the research workers, it has been stated in a written note submitted to the Committee:

"The scholars work under the guidance of the Director or other Senior Officers recognised by the Universities and the help of the other members of staff is available to the scholars for consultations and discussions etc. according to the need. As such no precise assessment can be given of the time of the Institute's staff spent on this. So far research scholars from the Punjab, Rajasthan, Aligarh

and Banaras Universities have taken their Doctorate Degrees. Research scholars from Andhra and Kerala Universities have submitted their theses and scholars from Bombay and Kerala are currently working in this Institute."

4.20. Asked whether it is a fact that Madras State is not sending any research scholars for conducting research at the Institute, it has been stated by the representative of the Ministry during evidence that that is true. Madras University is the only University which has not recognised the Institute as a centre for carrying out research leading to Doctorate degrees.

4.21. The Committee have further been informed that 35 scientists and Research Fellows from foreign countries were provided laboratory and research facilities during the last five years by the Institute, details of which are given below:—

Name of the Country	1963	1964	1965	1966	1967	Total
U. S. A.	16	5	..	..	..	21
U. K.	2	1	..	..	..	3
Japan	1	4	..	..	..	5
Sweden	1	..	..	..	..	1
Canada	1	..	..	..	..	1
New Zealand	2	..	..	..	..	2
Belgium	..	..	..	2	..	2
Total	23	10	..	2	..	35

4.22. It has been stated that 5 Indian scientists and researchers employed with the Institute were sent abroad for training during 1962 and 1963.

4.23. The Committee feel that very few universities in India are taking advantage of the facilities provided at the Institute for research leading to the award of Ph.D. and D.Sc. Degrees. They are not aware of the reasons why Madras University has not recognised the Institute as a centre for carrying out research leading to award of Ph.D. and D.Sc. Degrees. The Committee suggest that concerted efforts should be made to attract more and more researchers for conducting research at the Institute. They also suggest that the Ministry may take up with the State Government of Madras and the University of Madras the question of according recognition to the Institute as a centre for research on marine biology leading to the award of doctorate degrees.

4.24. The Committee note that only 35 scientists and research workers had come to the Institute from foreign countries for doing research work (23 in 1962; 10 in 1964; and 2 in 1966). The Committee suggest that appropriate steps may be taken to attract a larger number of researchers from foreign countries for doing research work at the Institute, after fully catering to the needs of Indian research workers.

D. Library

4.25. It has been stated that the Library of the Institute has a total number of over 10,000 scientific publications and journals, the total cost of which is estimated at over 2 million rupees and every year a number of periodicals and books are added by purchase or exchange. It has been claimed during evidence that this is the best Library in fisheries and marine sciences in South-East Asia.

4.26. The number of persons who utilised the Library during each of the last three years is as follows:—

Year	Staff employed in the Institute	Outsiders
1965	218	148
1966	215	164
1967 (Apr.—Aug.)	225	134

4.27. It has been represented to the Study Group of the Estimates Committee which visited the Institute in September, 1967 that the Library is not at all adequately staffed. The person incharge is of the grade of Senior Clerk and all efforts to get the requisite staff sanctioned for the past several years have not met with any success. Recently also proposals have been sent for the creation of posts of one Senior Librarian, one Library Assistant and one Clerk to meet the immediate requirements of the Library. It has further been represented that air-conditioning of the Library is necessary as the Library contains an extensive collection of essential books (some rare), periodicals, monographs and scientific reports relating to fisheries in particular and aquatic sciences in general.

4.28. During evidence the representative of the Ministry has admitted that the Library is not adequately staffed. The question of creating additional posts has been referred to the O. & M. Division. So far as the proposal to have an air-conditioned room for the library is concerned, it has been stated that this could be taken

up only at the time of the construction of new buildings. There is a need to look after the Library properly but it could not be done in the present hutments. It has been further stated that a team of two or three experts from the United States and the Rockefeller Foundation have visited the Library and they are expected to submit their Report on the 13th November, 1967. It is hoped by the Ministry that Indian Council of Agricultural Research would take necessary action on this.

4.29. The Committee are concerned to note that the Library of the Institute which is claimed to be the best Library in fisheries and marine sciences in South-East Asia is poorly equipped and inadequately staffed for the last several years. They are unhappy to learn that Government have not taken any action to equip and staff the Library adequately even though the matter has been, on several occasions, referred by the Institute to them. The Committee hope that the Indian Council of Agricultural Research will take immediate and adequate steps in this behalf.

E. Laboratory

4.30. It has been stated in Dr. Hickling's Report that—

“As to equipment there is shortage of calculating machines both at Mandapam Camp for the use of the Fisheries Survey and at the out-stations. Staff who have to do their calculations long-hand are wasting which could be better spent. The aqua-lung equipment in use at Tuticorin is becoming worn out and parts need renewal. More binocular microscopes are needed and a ultramoh inserted microscope for plankton work. Centrifuges are needed for plankton work. As to oceanography there is a long list of items needed, especially when there are research vessels, for plankton and by drographical work. Such a list could be supplied, and the best use of research vessels cannot be made without adequate equipment, the cost of which is not great in comparison with that of the ships themselves.”

4.31. The Committee have also been informed that the Institute was providing since 1958 laboratory and other experimental facilities to the Central Electro-Chemical Research Institute, Karaikudi for locating a field corrosion Testing Laboratory at Mandapam Camp which is all the year round subject to severe saline atmospheric exposure consequent on the unique location of the place abutting the two seas, Gulf of Manner and Palk Bay on either side.

4.32. Asked whether the Laboratory of the Institute is adequately equipped and staffed the representative of the Institute has stated during evidence that the Laboratory is now sufficiently equipped for the staff that the Institute has at present. As the time of Dr. Hickling, there was some difficulty but necessary funds have been allotted since then for calculating machines, microscopes, etc. The present position is all right.

4.33. The Committee note that the Laboratory is now well equipped.

F. General Museum and Aquarium

4.34. It has been stated that the Museum at present has a variety of exhibits pertaining to fish and other marine fauna and flora. It has been claimed that the Museum is not only the best in South-East Asia but is one of the best in the world since hardly any other fisheries institute within the country or outside has one of this magnitude.

4.35. It has further been stated that over 10 thousand persons including school students visit the General Museum every year.

4.36. It has been represented to the Study Group of the Estimates Committee which visited the Institute during September, 1967 that the Museum required reorganisation to impart information on the fish and fisheries of the country. There is no guide lecturer and in the absence of any personnel, the exhibits are not explained except during the visits of V.I.Ps. and on occasions when special requests are received from any interested party. Additional staff, therefore, is a necessity. Proposals have already been sent for the post of a Curator, a Reference Collection Assistant and a Museum Attendant.

4.37. It has been admitted during evidence that the Museum of the Institute needs improvement. The Committee have been assured that the proposal for the appointment of a guide lecturer at the Museum would be examined.

4.38. The Committee have also been informed that the Institute has an Aquarium with continuous supply of circulating sea and fresh water and a pair of dugongs or the so called "Mermaids" has been living in the aquarium tank for the past seven years which is the longest period on record in the world for these animals in captivity.

4.39. About the preservation of the two dugongs (mermaids), the representative of the Institute has stated that the tank in which

they were kept is small. Actually, the work on this side does not form a regular activity of the Institute. But as these are the only two in captivity and they are extremely interesting and rare species, they are kept at the Institute. It has been further stated that it would be useful to have an aquarium, but financially it would be beyond the capacity of the Institute to provide that. Asked, whether they could not be transferred to the Delhi Zoo, the representative of the Institute has stated that they must have salt water. The representative of the Ministry has assured the Committee that he would look into this matter.

4.40. The Committee need hardly emphasise the desirability of staffing the general Museum of the Institute adequately. They apprehend that if it is not staffed and maintained properly, the exhibits may deteriorate for lack of proper care and be lost to the posterity due to neglect. They would also urge that a guide lecturer should be provided for the Museum so that he could explain the exhibits contained therein to the students and visitors who visit the Museum in large numbers.

CHAPTER V

SUB-STATIONS

A. Various Sub-Stations, Units and Centres

5.1. It has been stated that the Institute has 5 Sub-stations, 8 Research Units and 27 Research Survey and Field Centres as detailed below:—

Sub-Stations	5	(Kozhikode, Ernakulam, Bombay, Karwar and Madras)
Units	8	(Veraval, Mangalore, Cannanore, Vizningam, Tuticorin, Waltair, Minicoy and Andamans)
Centres	27	(Jamnagar, Dahanu, Alibagh, Ratnagiri, Malvan, Ganguli, Neendakara, Chowghat, Colachel, Cape Comorin, Adirampatnam, Cuddalore, Chidambaram, Nagapatnam, Pondicherry, Mahabalipuram, Nellore, Ongole, Narasapur, Machilipatnam, Kakinada, Palasa, Calingapatnam, Gopolpur, Junput Alleppey, Surat).

5.2. Asked to state the distinguishing features of a Sub-stations, Unit and a Centre, it has been stated in a written note submitted to the Committee that the Centres are those where only junior members of staff are posted mostly for collection of survey data or such routine data and where normally no research work is carried on. The Unit is where regular research programmes are undertaken and is generally staffed with a limited number of Research personnel. When the complement of staff at a Research Unit is further augmented and several research projects are implemented under the supervision of a senior officer, the Research Unit is raised to the level of a Sub-station.

5.3. The Committee have further been informed that all the Sub-stations/Units/Centres are periodically inspected by Director, Deputy Director and other senior officers. Periodical meetings and discussions are also held by the scientific workers engaged in specific major programmes.

5.4. Asked whether any powers have been delegated to the officers-in-charge of these Sub-stations/Units/Centres so that they may be able to carry on the day-to-day work without referring it to the Headquarters, it has been stated in a written note submitted to the Committee that Officers-in-Charge of Sub-stations and Research Units have been declared as Heads of Offices under the provision of Financial Rules to enable them to carry out the day-to-day work. Since these officers do not have adequate competent ministerial staff to assist them and also not placed with separate funds at their disposal, they are to refer matters of expenditure other than on purely routine items to Headquarters before actually incurring expenditure.

5.5. The Committee have already commented on the 'Decentralisation of work' as between the Headquarters of the Institute and its various sub-stations/units/centres in para 2.21 of the Report. The Committee feel that the question of greater delegation of financial and administrative powers to the various officers-in-charge should be gone into thoroughly so as to eliminate unnecessary delays.

B. Madras Sub-station

5.6. It has been stated that the Madras Sub-station of the Institute was started as a Research Unit in November, 1952 in a single room, made available by the University of Madras. It was shifted to its present premises in 1964 and made into a Sub-station in 1966.

5.7. The objects of the Sub-station are to conduct routine fishery survey and to tackle some of the local problems relating to the fishery and biology of commercially important inshore fishes and backward oysters. Subsequently the study of the prawn fisheries of Madras and Pulicat Lake, Marine biology in relation to fisheries, studies on ribbon fish, silver bellies and fish index were undertaken.

5.8. The present staff strength of the Sub-station has been stated to be as follows:—

Research Officer and Officer-in-Charge (Class I, Junior)	.. 1 Permanent
Assistant Research Officers (Class II Survey Assistants, Selection Grade Off- ciating as Assistant Research Officers)	.. 2 Permanent

Research Officer and Officer-in-Charge (Class II Non-Gazetted)	.. 2 Permanent
Research Assistants, Officiating in Selection Grade (one on leave) (ex-India)	-do-
Research Assistants (Class III) (one permanent ex-India on leave)	.. 4 (3 temporary)
Field Investigators (2 Permanent Field Assistants)	.. 3 (1 temporary)
Junior Clerk	.. 1 (Permanent)

5.9. Asked whether the administrative set-up of the Sub-station is adequate for its smooth and efficient functioning, it has been stated in a written note submitted to the Committee that it is adequate for the scientific work now in hand but additional ministerial staff would be desirable.

5.10. So far as the provision of a permanent building for the Sub-station is concerned, it has been stated that the matter is under correspondence with the State Government since April, 1960. The history of the case as furnished by the Institute is given below:—

“The proposals for providing permanent accommodation for the Central Marine Fisheries Research Sub-Station, Madras was submitted to the Ministry of Food and Agriculture (Department of Agriculture), New Delhi early in 1960 and the Ministry in April 1960 approached the Health, Education and Local Administration Department, Government of Madras, in the matter, and subsequently on 10th July, 1961 approached the Food and Agriculture Department, Government of Madras for providing a suitable site. The Central Marine Fisheries Research Sub-Station at that time was accommodated in the University of Madras, buildings in their Biochemical Laboratory looking out for alternate accommodation.

On 17th February, 1962 the Director, Central Marine Fisheries Research Institute addressed the Chief Secretary to the Government of Madras that it has been brought to his notice that a plot in the area on South Beach Road, North of Napier Bridge and War Memorial, South of Sea Man's Hostel, east of road along strip of unsurveyed foreshore land opposite the Fort is reported to be available and re-

requested to transfer a plot from this site. We were informed by the Collector of Madras, that the land has already been reserved for park purposes by the Madras Government and as such would not be available for acquisition. It was informed by the Executive Engineer, Madras Central Division in October, 1962 that a plot measuring about 3½ grounds adjoining the Kepali Talkies Mylapora, Madras is lying vacant, the owner having purchased it from the City Improvement Trust. The plot was jointly inspected along with the Commissioner of Land Revenue, Board of Revenue, Madras and the Director, Central Marine Fisheries Research Institute but this did not materialise. On intimation from the Collector of Madras the Director Central Marine Fisheries Research Institute addressed the Secretary to the Government, Revenue Department, Madras to transfer plot measuring 3½ grounds abutting Adams Road and New Bridge Road and adjacent to Indian Institute of Engineers. This position was apprised to the Ministry of Food and Agriculture in September, 1963. The Director, Central Marine Fisheries Research Institute also visited Madras in October 1963 during his tour to Delhi and had inspected several plots along with the then Chairman of the Board of Revenue, Government of Madras and had discussions on the spot. After protracted correspondence, it was finally informed in March 1965 by the Special Additional Secretary to the Madras Government that it was not possible to accede to our request in view of the several competing requests for the land. The matter was further pursued to transfer alternate site viz. R.S. No. 128/1 in Urur Village, South Taluq, since another land at the mouth of the river Coovum bearing R.S. No. 1803 of vepery is lying adjacent to the Madras Port Trust lands and hence will not be available in as much it is required for the future expansion of the Madras Harbour due to its National importance. The availability of this land R.S. No. 128/1 was initiated to us by the Collector of Madras in July, 1966.

The matter was pursued with the Board of Revenue by the Madras Government and the Revenue Board (I.R.) communicated to this office that they agreed with the Collector of Madras and recommended to the Madras Government to accord sanction for transfer of land measuring 2.77 acres in R.S. No. 128/1 of Urur Village, South East

Taluk, Madras and assessed the land value of Rs. 1,33,074-34 and subject to the condition that the two roads running through the land should not be interfered with. The above recommendation of the Board of Revenue (Land Revenue) was presented by the Board to the Madras Government vide their proceedings No. B.P. PERM. 928(E) dated 21st July, 1967. The Ministry of Food, Agriculture, Community Development and Cooperation (Department of Agriculture) New Delhi was addressed by the Director, Central Marine Fisheries Research Institute in August, 1967 for necessary administrative approval and expenditure sanctioned for Rs. 1,33,076.00 for the acquisition of the above land in Urur Village for the construction of permanent accommodation to the Central Marine Fisheries Research Sub-Station, Madras.

The Ministry advised in September, 1967 to ask the Government of Madras to reserve the land provisionally for the use of the Central Marine Fisheries Research Institute and that further action on the proposal may be taken as soon as the order for the transfer of the Institute to Indian Council of Agricultural Research are issued, which is being done."

5.11. It has been stated in a written note submitted to the Committee that the present building is just adequate for the existing staff but is inadequate to house the expanded activities of the Sub-station, as there is not sufficient space to keep the furniture, stores, scientific equipments, nets, gear properly; and as it is, the accommodation is a little congested. With the approval of the Fourth Plan schemes, more scientific personnel may have to be posted to work at the Madras Sub-station. At present staff expansion has not been made purely in view of the paucity of accommodation and working space.

5.12. It has further been stated that attempts to hire some other building have not been made as yet due to delay in sanction of staff under plan proposals. The rent of buildings at Madras is exorbitantly high and there is keen competition for vacant blocks or buildings.

5.13. The Committee feel that expansion of the activities of the Madras Sub-station of the Institute is closely linked with the provision of permanent buildings for the Sub-station. The Committee are concerned to note that no staff expansion has been made purely on the ground that there is paucity of accommodation and working space. They apprehend that the work on the Fourth Plan schemes,

are not taken to provide permanent buildings for the Sub-station, when approved, would seriously lag behind, if simultaneous steps especially in view of the difficulty in obtaining rented accommodation in Madras. Now that the Institute has gone under the control of the Indian Council of Agricultural Research, the Committee hope that immediate steps will be taken in this direction for concerted action both with regard to personnel and equipment on the one hand and accommodation on the other.

C. Ernakulam Sub-station

5.14. It has been stated that the Sub-station at Ernakulam had its beginning in October, 1951 as the Prawn Research Unit of the Central Marine Fisheries Research Institute. Subsequently, the unit was upgraded as a Sub-station and in addition to research on prawn fisheries, the research activities of the Sub-Station were expanded to include studies on mackerel and oil sardine, oceanography and marine biology and offshore fisheries and fishery survey and statistics.

5.15. The designing of a suitable sampling technique and putting the same into operation for estimating the State-wise and variety-wise landings of marine fish together with the estimate of the input of effort form the main objective of the fishery survey section. The main objective of the fishery statistics section is to assess the impact of fishing on the stocks of some of the important commercial fisheries and also to understand the causes of fluctuations in the annual catches of some of the important fisheries.

5.16. It has been further stated that the Sub-station has got one small vessel "Chemmeen" which collects the data in the inshore waters. Besides, the research vessel "Varuna" belonging to the Indo-Norwegian Project has been placed at the disposal of the Sub-station for the collection of marine biological, oceanographical and fishing data from the Sea. In addition, data from Indo-Norwegian Project and Government of India are also used.

5.17. Asked whether the administrative set up of the Sub-station is adequate to continue the research on the existing schemes and for undertaking new schemes, it has been stated in a written note submitted to the Committee that the administrative set-up is not adequate. The matter is being examined in the light of recent restrictions.

5.18. Asked whether it is a fact that the Sub-station is housed in two separate buildings quite at a distance from one another, the Committee have been informed that the Sub-station is accommodat-

ed in two separate buildings at a distance of about 4 Kms. apart. This is owing to non-availability of a single large building for the purpose. Asked what efforts have been made to acquire a single building for the purpose, it has been stated that the Institute has been on the look out for such a single building that would be suitable. Indian Council of Agricultural Research had also been requested to allot the premises of the former Indian Coconut Research Institute there to the Institute. Final decision has not yet been taken.

5.19. The Committee regret to note that the administrative set-up of the Ernakulam Sub-station is inadequate. They need hardly point out that an adequate administrative set-up is a pre-requisite for smooth and efficient functioning of an institution. They would urge that the matter be examined thoroughly and an early decision taken.

5.20. The Committee also feel that proper supervision over the Sub-station is difficult in view of the fact that it is housed in two separate buildings quite at a distance from one another. The Committee would like the Indian Council of Agricultural Research to look into this question immediately and decide if the premises of the former Indian Coconut Research Institute could be allotted to the Sub-station for the time being pending construction of its own building.

D. Calicut Sub-station

5.21. Dr. Hickling has observed in his Report that the permanent Station at Calicut has no harbour facilities for research vessels and the port is practically closed from the beginning of June to the end of August.

During evidence, the representative of the Ministry has stated that a research Vessel has a cruising range of thousand miles or more and could be operated from a major port. Calicut is a very important fishing centre but it is not necessary that all sub-stations should have major ports.

5.22. In view of the fact that Calicut is a very important fishing centre, the Committee stress that the Sub-station of the Institute at Calicut should be strengthened and the feasibility of providing enough landing and berthing facilities there considered.

NEW DELHI;
February 12, 1968.

Magha 23, 1889 (Saka).

P. VENKATASUBBAIAH,
Chairman,
Estimates Committee.

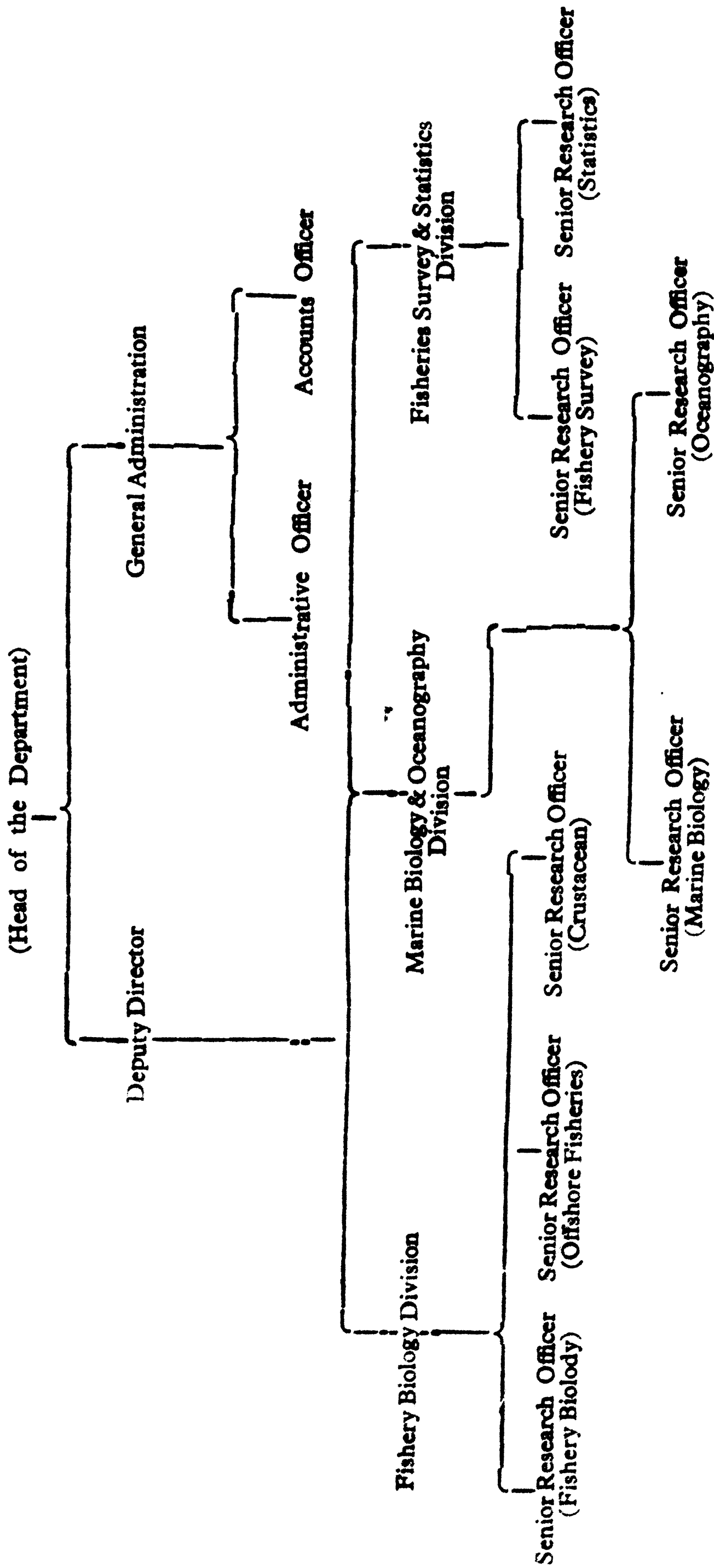
APPENDIX I

(vide para 2.1 of the Report

CENTRAL MARINE FISHERIES RESEARCH INSTITUTE, MANDAPAM CAMP

ORGANISATIONAL CHART

DIRECTOR



Details of the Staff working under each division at different Centres and in the Administration and Accounts Sections may be seen in the attached sheets.

**CENTRAL MARINE FISHERIES RESEARCH INSTITUTE,
MANDAPAM CAMP**

HEADQUARTERS—MANDAPAM CAMP

DIRECTOR

Designation	No. of Posts	Subject
I	2	3

I. Fishery Biology Division

Res. Officer (Junior)	• •	1	Mackerel.
Asstt. Res. Officers	• •	4	Mackerel, Silver-bellies and Physiology (2).
Research Asstts. (Selection Grade)	• •	1	Chirocentridee.
Research Assistants	• •	4	Scombroid fishes, Prawns & Bottom fauna, Fishery Biology.
Technical Assistants	• •	2	Reference collection and Museum.
Field Investigator	• •	1	Fishery Biology.
Field Asstts.	• •	2	Fishery Biology and Physiology.

II. Marine Biology and Oceanography Division

Assistant Research Officer	•	1	Algology.
Research Assistt.	• •	1	Algology.

III. Fishery Survey & Statistics Division

Senior Res. Officer	• •	1	} Fishery Survey.
Survey Asstt. (Selection Grade).	• •	1	
Field Investigators	• •	3	
Field Assistants	• •	2	

I	2	3
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CENTRAL MARINE FISHERIES RESEARCH UNIT, VERAVAL

I. *Fishery Biology Division*

Research Officer (Jr.)	.	.	I	Fishery Biology.
Research Asstt. (Selection Grade)	.	.	I	Prawns.
Research Assistant	.	.	I	Prawns.

II. *Fishery Survey & Statistics Division*

Field Assistant	.	.	I	Fishery Survey.
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CENTRAL MARINE FISHERIES RES. SUB-STATION, BOMBAY

I. *Fishery Biology Division*

Senior Res. Officer	.	.	I	Fishery Biology.
Assistant Res. Officer	.	.	I	Prawns.
Res. Asstt. (Selection Grade).	.	.	I	Fishery Biology.
Res. Assistants	.	.	5	Fishery Biology (4) and Prawns (1)
Field Asstt.	.	.	2	Fishery Biology.

II. *Marine Biology & Oceanography Division*

Research Assistant	.	.	I	Marine Biology.
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III. *Fishery Survey & Statistics Division*

Assistant Res. Officers	.	.	2	} Fishery Survey.
Research Asstt.	.	.	1	
Field Investigators.	.	.	2	

CENTRAL MARINE FISHERIES RES. SUB-STATION, KARWAR

I. *Fishery Biology Division*

Res. Officer (Junior)	.	.	I	Fishery Biology.
Asstt. Research Officer	.	.	I	Mackerel.
Research Assistants	.	.	2	Sardine and Prawns.
Field Investigator	.	.	I	Fishery Biology.

I	2	3
II. <i>Marine Biology & Oceanography Division</i>		
Research Asstts. . . .	2	Marine Biology.
III. <i>Fishery Survey & Statistics Division</i>		
Field Investigator] . . .	I	} Fishery Survey.
Field Asstt. . . .	I	

CENTRAL MARINE FISHERIES RESEARCH UNIT, MANGALORE

I. *Fishery Biology Division*

Research Officer (Jr.) . . .	1	Sardine.
Asstt. Res. Officers . . .	3	Sardine, Mackerel and Prawns.
Research Assistants . . .	3	Sardine, Mackerel & Prawns.
Field Asstt. . . .	1	Fishery Biology.
Laboratory Attender . . .	1	Fishery Biology.

II. *Marine Biology & Oceanography Division*

Survey Asstt. . . .	1	Marine Biology.
(Selection Grade)		

III. *Fishery Survey & Statistics Division*

Survey Asstt. . . .	I	} Fishery Survey.
Field Assistant . . .	I	

CENTRAL MARINE FISHERIES RESEARCH UNIT, CANNANORE

I. *Fishery Biology Division*

Asstt. Res. Officers . . .	2	Mackerel & Fishery Biology
Research Assistants . . .	2	Sardine & Prawns.
Scientific Asstt. (Jr.) . . .	1	Mackerel.

II. *Fishery Survey & Statistics Division*

Field Investigator . . .	1	Fishery Survey.
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CENTRAL MARINE FISHERIES RES. SUB-STATION, KOZHIKODE

I. *Fishery Biology Division*

Senior Res. Officer . . .	1	Mackerel and Soles.
Res. Officer (Junior) . . .	1	Mackerel.
Asstt. Res. Officer . . .	1	Mackerel
Res. Asstt. (Selection Gr.) . . .	1	Sardine.
Res. Asstt.	2	Prawns & Silver-bellies.
Field Asstt.	1	Fishery Biology.

II. *Marine Biology & Oceanography Div.*

Asstt. Res. Officer . . .	1	Marine Biology.
Res. Asstt. (Selection Grade)	1	„ „
Research Asstt.	1	„ „

III. *Fishery Survey & Statistics Division.*

Asstt. Res. Officer . . .	1	} Fishery Survey.
Survey Asstt.	1	
Field Assistant	1	

CENTRAL MARINE FISHERIES RES. SUB-STATION ERNAKULAM

DEPUTY DIRECTOR

I. *Fishery Biology Division.*

Senior Res. Officer . . .	1	Prawns.
Res. Officer (Jr.) . . .	1	Fishery Biology
Asstt. Res. Officers . . .	3	Sardine (2) & Prawns (1)
Res. Assistants	3	Mackere (1) & Prawns (2)
Survey Asst. (Selection Grade)	1	Fishery Biology.
Scientific Asstts. (Jr.) . . .	2	Prawns and Fishery Biology
Field Investigators	2	Fishery Biology.

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II. Marine Biology & Oceanography Division

Senior Res. Officer	.	.	.	1	Marine Biology.
Res. Officers (Junior)	.	.	.	3	Marine Biology (1) & Oceanography (2).
Asstt. Res. Officers	.	.	.	3	Primary Production (1) & Oceanography (2).
Research Assistants	.	.	.	4	Primary Production (1) and Marine Biology (3).
Scientific Asstts. (Jr.)	.	.	.	2	Marine Biology.
Field Investigators	.	.	.	2	Primary Production & Plankton.
Field Assistants	.	.	.	2	Plankton.

III. Fishery Survey & Statistics Division

Senior Res. Officer	.	.	.	1	} Statistics.
Research Officer (Jr.)	.	.	.	1	
Asstt. Res. Officer	.	.	.	1	
Research Asstts.	.	.	.	3	
Research					
Field Investigator	.	.	.	1	
Computers	.	.	.	5	

CENTRAL MARINE FISHERIES RES. UNIT, VIZHINGAM

I. Fishery Biology Division

Assistant Res. Officer	.	.	.	1	Sardine.
Res. Assistant	.	.	.	1	Mackerel.
Field Asstt.	.	.	.	1	Fishery Biology.

II. Fishery Survey & Statistics Division

Field Investigators	.	.	.	1	Survey
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CENTRAL MARINE FISHERIES RES. UNIT, TUTICORIN.

I. Fishery Biology Division

Asstt. Res. Officers	.	.	.	3	Fishery Biology (1) & Mollusca (2).
Res. Assistants	.	.	.	1	Sciaenids.
Scientific Asstt. (Jr.)	.	.	.	1	Fishery Biology.
Field Investigator	.	.	.	1	Ribbon-fishes.

II. Fishery Survey & Statistics Division

Field Assistant	.	.	.	1	Fishery Survey.
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CENTRAL MARINE FISHERIES RESEARCH SUB-STATION, MADRAS

I. Fishery Biology Division.

Res. Officer (Jr.)	•	•	•	1	Fishery Biology.
Asstt. Res. Officer	•	•	•	1	Ribbon-fishes.
Res. Assistants	•	•	•	2	Prawns and Silver-bellies.
Field Investigator	•	•	•	1	Prawns.

II. Marine Biology & Oceanography Division

Research Asstt.	•	•	•	•	1	Marine Biology.
Field Asstt.	•	•	•	•	1	Hydrology.

III. Fishery Survey & Statistics Division

Survey Asstt. (Selection Grade)	•	•	•	•	1	Fishery Survey.
Field Investigator	•	•	•	•	1	„ „
Field Asstt.	•	•	•	•	1	„ „

CENTRAL MARINE FISHERIES RES. CENTRE, KAKINADA

I. Fishery Biology Division.

Research Asstts.	•	•	•	•	2	Ribbon-fishes & Prawns.
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II. Fishery Survey & Statistics Division

Field Investigator	•	•	•	•	1	Fishery Survey.
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CENTRAL MARINE FISHERIES RES. UNIT, WALT AIR

I. Fishery Biology Division

Research Officer (Jr.)	•	•	•	•	1	Fishery Biology.
Asstt. Res. Officers	•	•	•	•	3	„ „
Res. Asstts. (Selection Gr.)	•	•	•	•	1	Fishery Biology.
Res. Assistants	•	•	•	•	3	Fishery Biology.

II. Marine Biology & Oceanography Division

Res. Assistant	•	•	•	•	1	Marine Biology.
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III. Fishery Survey & Statistics Division

Field Assistant	•	•	•	•	1	Fishery Survey.
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CENTRAL MARINE FISHERIES RESEARCH UNIT, MINICOY

Laboratory Attender. 1 Fishery Biology

CENTRAL MARINE FISHERIES RESEARCH UNIT, PORT BLAIR, ANDAMANS
I. Fishery Biology Division

Asstt. Research Officer : 1 Perches.
 Res. Assistant 1 Anchovies
 Field Asstt. 1 Fishery Biology.

IV. GENERAL ADMINISTRATION
headquarters Instt. Madndapam Camp
(1) Administrative Officer :—
(a) Administration section :—

1. One Superintendent .
2. One Senior Clerk .
3. One Stenographer .
4. Four Junior Clerks .

(b) Genl. Section :

1. One Head clerk
2. One Senior clerk
3. Three junior clerks
4. One Field Asstt.
5. One Caretaker.

(b) Library :—

1. Two.

(b) Stores Section :—

1. One Senior Storekeeper
2. Two Senior Clerks
3. Two Storekeepers.
4. Two Junior Clerks.

(c) Library :—

1. Two Librarians.
2. One Artist Photographer.

(d) Watch & Ward and Security of Govt. buildings at Mandapam.

1. One Senior Caretaker.
2. One Caretaker.

(e) Workshop and Carpentry :—

1. One Mechanic.
2. One Carpenter.

Boat Crew :—

1. Two Serangs.
-

(2) *Accounts Officer* :—

(a) *Accounts section* :—

1. One Superintendent.
2. One Account.
3. One Cashier.
4. One Accountants Clerk
5. Three Senior Clerks
6. Seven Junior Clerks.

(3) *Subordinate establishments* :—

1. One Stenographer.
2. Three Senior Clerks.
3. Nine Junior Clerks.
4. One Driver-*cum*-serang.
5. One Serang.

**SURVEY AND FIELD CENTRES OF CENTRAL MARINE FISHERIES RES.
INSTITUTE**

Jamnagar	.	.	.	.	Field Assistant	.	.	.	1
Surat	.	.	.	.	Survey Asstt.	.	.	.	1
Dahanu	.	.	.	.	Field Investigator	.	.	.	1
Alibag	.	.	.	.	Survey Asstt.	.	.	.	1
Ratangiri	.	.	.	.	Field Investigator	.	.	.	1
Malvan	.	.	.	.	Field Investigator	.	.	.	1
Ganguli	.	.	.	.	Field Assistant	.	.	.	1
Chowghat	.	.	.	.	Field Investigator	.	.	.	1
Alleppey	.	.	.	.	Field Investigator	.	.	.	1
Neendakara	.	.	.	.	Survey Asstt.	.	.	.	1
					Field Investigator	.	.	.	1
Colachel	.	.	.	.	Field Investigators	.	.	.	2
					Field Assistant	.	.	.	1
Cape Comorin	.	.	.	.	Field Assistants	.	.	.	2
Adirampatnam	.	.	.	.	Survey Assistant	.	.	.	1
Nagapatnam	.	.	.	.	Field Investigator	.	.	.	1
Porto Novo	.	.	.	.	Field Investigator	.	.	.	1
Cuddalore	.	.	.	.	Field Assistant	.	.	.	1
Pondicherry	.	.	.	.	Field Investigator	.	.	.	1
Mahabalipuram	.	.	.	.	Field Investigators	.	.	.	2

Nellore	.	.	.	Field Assistants	.	.	• 2
Ongole	.	.	.	Field Assistant	.	.	• 1
Machilipatnam	.	.	.	Field Assistant	.	.	• 1
Narasapur	.	.	.	Survey Assistant	.	.	• 1
Calingapatnam	.	.	.	Field Assistant	.	.	• 1
Pundi	.	.	.	Field Assistant	.	.	• 1
Gopalpur	.	.	.	Field Investigator	.	.	• 1
Junput	.	.	.	Survey Assistant.	.	.	• 1

APPENDIX II

(Vide para 2.11 of the Report)

S. No.	Name	Designation	Reasons
1.	Shri N. Nachiappan	Research Assistant	Resigned.
2.	Shri A. D. Ravishankar	Research Assistant	Resigned.
3.	Shri M. J. Sebastian	Research Assistant	Resigned.
4.	Shri K. R. Pazhukkan	Research Assistant	Resigned.
5.	Shri D. Sudarsan	Research Assistant (Selection Grade)	On higher appointment in Zoological Survey of India.
6.	Shri V. Srinivasa Sarma	Survey Assistant	Resigned.
7.	Dr. P. K. Talwar	Assistant Research Officer.	On higher appointment in Zoological Survey of India.
8.	Shri S. Venugopala Pillai	Research Assistant	Resigned.
9.	Dr. A. K. Naghabhusan	Asstt. Research Officer.	Resigned.
10.	Shri K. Ramesh Nayak	Research Assistant (Selection Grade)	Resigned.
11.	Shri K. Gopalakrishna	Survey Assistant	Resigned.
12.	Dr. V. S. Durve	Assistant Research Officer	On higher appointment in Zoological Survey of India.
13.	Shri Anukul Datta	Assistant Research Officer.	Resigned.
14.	Shri R. Alfred Selvakumar	Research Assistant	Resigned.
15.	Shri L. B. Pradhan	Research Officer (Jr)	On retirement.
16.	Shri A. Ifthikhar Ahmed	Survey Assistant.	Resigned.
17.	Shri R. Dinakaran Micheal	Survey Assistant	Resigned.
18.	Shri M. Kumaran	Research Assistant	On higher appointment on deputation to Andaman Administration.

S.No.	Name	Designation	Reasons
19.	Shri S. Kasinathan	Asstt. Res. Officer	On resignation.
20.	Shri S. Rahu Ram Rao	Research Assistant	On resignation.
21.	Shri E. Sarngan	Research Assistant	On resignation.
22.	Dr. A. K. Mandal	Frog Research Development Officer.	Transferred along with the post to C.I.F.R. I. Barrackpore.
23.	Shri L. R. Kasturirangan	Asstt. Res. Officer	On higher appointment in Council of Scientific and Industrial Research.
24.	Dr. P. Prasanna Varma	Asstt. Res. Officer	On higher appointment in Botanical Survey of India.
25.	Shri K. Raman	Research Assistant	On higher appointment in Central Inland Fisheries Research Institute.
26.	Shri K. Srinivasa Rao	Research Assistant	On higher appointment in Central Institute of Fisheries Education, Bombay.
27.	Shri M. R. Patil	Asstt. Res. Officer	—do—
28.	Shri Udaya Varma Thirupad.	Research Assistant	Resigned.
29.	Shri P. A. Thomas	Survey Assistant	—do—
30.	Shri M. Kochu Madhavan	Research Assistant	Resigned.
31.	Shri V. N. Bande	Research Assistant	On higher appointment on deputation to Goa Administration.
32.	Shri R. M. Dhewan	Research Assistant	—do—
33.	Shri P. T. Thomas	Asstt. Res. Officer	Resigned.
34.	Shri P. C. George	Research Officer (Jr. scale)	On higher appointment in Central Institute of Fisheries Education, Bombay.
35.	Dr. A. Daniel	Senior Research Officer.	Resigned.

APPENDIX III

(Vide para 3.1.1 of the Report)

Research programmes undertaken during the last five years which could not be completed in the stipulated time

S. No.	Name of Project/Scheme	1962-63	1963-64	1964-65	1965-66	1966-67	Remarks
		(1)	(2)	(3)	(4)	(5)	(6)
		(1)	(2)	(3)	(4)	(5)	(7)
I	Fishery Survey.						This is a continuing Scheme.
II	Biology of Oil Sardine.						
	(i) Composition of year-class supporting fishery.						The large volume of data collected is being processed to decide on the nature of the continuing survey to be adopted for future work.
	(ii) Maturity, age, sex ratio, egg and larval abundance.						
	(iii) Survey of Offshore area.						
	(iv) Assessment of inter-action of factors governing abundance of species and year classes in time and space.						
	(v) Forecasting						
	(vi) Fat content.						

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(i) Composition of year-class supporting fishery.

(ii) Maturity, age, sex ratio, egg and larval abundance.

(iii) Survey of Offshore area.

(iv) Assessment of inter-action of factors governing abundance of species and year classes in time and space.

(v) Forecasting

(vi) Fat content.

Fragillaria Oceanica was proposed as an indicator, the problem is a continuing one.

Is likely to continue for three or four years more.

(1)	(2)	(3)	(4)	(5)	(6)	(7)
III	Biology of Mackerel.					
(i)	Composition of year class supporting fishery.	This is a continuing problem.				
(ii)	Maturity, age, sex ratio, egg and larval abundance.					
(iii)	Survey of offshore area	Started.	Continued	Continued	Continued	This is a continuing problem.
(iv)	Assessment of interaction of factors governing abundance and distribution of year class in time and space.	Continued	Continued	Continued	Continued	This is a continuing problem.
(v)	Behavioural studies	Started.	Continued	Continued	Continued	This is a continuing problem.
IV	Prawn & Lobster biology.]					
(i)	Composition of year class and species and supporting fishery.	—	Continued	—	—	Taxonomy and distribution studies have been complete Biology of.
(ii)	Maturity age, sex ratio of species supporting fishery in different areas	—	—	—	—	<i>Metapenaeus dobsoni</i> completed. Studies on growth rate, age, feeding habits, maturation and spawning of <i>Metapenaeus dobsoni</i> , <i>M. affinis</i> , <i>Solenocera indicus</i> , <i>Palaeomon tenuipes</i> etc., were made and need further work.
(iii)	Assessment and interaction of governing abundance and distribution of year classes in time and space.	—	Continued	—	—	This is a continuing problem.
(iv)	Assessment of interaction of factors governing abundance and distribution of species and year class in time and space.	—	—	—	—	During the years, the area of observation was extended. Observations have been made of the occurrence of Larval stages of <i>Penaeus indicus</i> , <i>P. carinatus</i> , <i>P. stylifera</i> , <i>Metapenaeus dobsoni</i> , <i>M.</i>
(v)	Location of breeding grounds.	—	Continued	—	—	—

affinis and *M. monoceros*.
This is a continuing problem.

(vi) Prawn farming Started. Continued Continued Results are not yet conclusive.

V Biology of Ribbon fish.

Taxonomy, bionomics Started. Continued Continued This has more or less been completed with reverence to three species viz., *Trichiurus lepturus*, *Lepturacanthus savala* and *Euplogrammus intermedius*.

VI Biology of other Clupeids.

(1) Kowal, *Thrissociles* and *Ilisha* Continued Continued Continued Study on the bionomics of *Kowal*, *coyal*, *Thrissocles mysta*, *Ilisha filigera* has been completed.

(2) White bait Continued Continued Continued Observations have been made on the maturation and spawning of *Acanthopagrus datuensis* & *A. heterolobe*.

(3) *Dussumieria* (Rainbow Sardine). Started Continued Continued Study continuing on *D. acuta* and *D. hasselti*.

(4) *Harangula* ova. Started Continued Continued Study undertaken at Andamans.

VII Biology of Seer Fish.

(i) Composition of year class and species supporting fishery. }
(ii) Maturity, age, sex, ratio food and feeding habits }

Some aspects of the biology, habitat, distribution etc. of *Scomberomorus gallus*, *S. commersoni*, *S. lineolatus* and *Acanthocybium solandri* could be studied.

VIII Biology of silver bellies.

(i) Composition of year class and species supporting fishery. }
(ii) Maturity, age, sex, ratio, food and feeding habits }

Observation has been made on *Leognathus* L. lineolatus and *L. splendens*.

(1)	(2)	(3)	(4)	(5)	(6)	(7)
IX. Biology of Sciaenidae : (i) Taxonomy (ii) Composition of year class spawning and larval stages	Continued		Continued	Continued	Continued	Taxonomical study completed. Biology of <i>Otolithus brunn-</i> <i>neus Pseudosciaena diacon-</i> <i>thus johnius dussumieri</i> and <i>Pseudosciaena vegleri</i> has been completed. Biological studies are in progress on <i>Pseudosciaena</i> <i>sina</i> and <i>Sciaena micropt-</i> <i>rus</i> .
X. Biology of Guna and Tuna like fishes						
Taxonomy and distribution	..	Started	Continued	Continued	Continued	The available data has been processed. However, since the species are oceanic in distribution the collec- tion has not been adequate and the work has to conti- nue more intensively.
Biology studies	..	Started	Continued	Continued	Continued	
Bait fishes	..	Started	Continued	Continued	Continued	
Food and feeding habits and biology of <i>Euthynnus affinis</i> , <i>Astax thazard</i> , <i>A. thomoi-</i> <i>des</i> , <i>Sarda orientalis</i> , <i>Kats-</i> <i>wonus pelamis</i> , <i>Thynnus alba-</i> <i>cores</i> have been studied. Studies on the tuna bait fishes of Laccadive sea were carried out.						
XI. Biology of other fishes.						
(1) Distribution in offshore areas	Continued		Continued	Continued	Continued	A good deal of information on milk fish, eel, Bombay- duck, sole horse mackerel (<i>caranx kalla</i> , <i>Selarodius lep-</i> <i>tolepis</i>), thread fish (<i>Poly-</i> <i>dactylus indicus</i>), cat fish, flying fish, sand whiting, Grunters, Goat fish, half
(2) Composition and year class repre- sented in offshore fisheries.						
(3) Maturity, age, sex, ratio, food and feeding habits.						

beaks, grey mullets and pomfrets have been collected. The work is to continue as the collection from off-shore regions has not been adequate.

XII Biology of molluscs.					
(i) Underwater exploration of chank and pearl cystes beds, off Tutuorin.	..	Started	Continued	Continued	3/4 of the Survey is over.
(ii) Biology of wedge clam.	..	Started	Continued	Continued	Observations have been made on growth bionomics, and maturity in selected entres. However, it has not reached a state when the results are fit for extension.
(iii) Biology of Venerid clam	..	Started	Continued	Continued	
(iv) Biology of Meretrix.	..	Started	Continued	Continued	
XIII Off-shore fisheries.					
	..	Continued	Continued	Continued	This is a continuing scheme. Preliminary survey of area upto 40 fathom line has been completed. The sea beyond has to be surveyed and detailed survey of the entire area remains to be undertaken, except for sea, off-Saurashtra, where fairly detailed surveys have been carried out.
XIV Physiology.					
(i) Use of Anaesthetic in live fish transport.	..	Started	Continued	Continued	Considerable data has been obtained regarding effect of anaesthetics on fish.
(ii) Metabolic rate of Mulletts.	..	Started	Continued	Continued	Findings are not yet conclusive.
(iii) Physiology of Meretric casks	..	..	Started	Continued	

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
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XV Plankton.

1. Survey on the qualitative and quantitative abundance of plankton.		Continued	Continued	Continued	Continued	Continued	This is a continuing scheme and forms the basis of many biology studies.
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2. Primary production	.	Started	Continued	Continued	Continued	Continued	This is also a continuing scheme. The technique has been considerably improved. The institution is now in a position to carry on with its own equipments and indigenously produced isotope.
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[XVI Hydrography.

Routine observation on oceanic meteorology, estimation of PH., Dissolved oxygen temperature, Salinity nutrients, etc.		Started]	Continued	Continued	Continued	Continued	This will be continuing scheme.
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[XVII. Bottom fauna .

	.	..	Started]	Continued	Continued	Continued	Done
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XVIII Algae

	.	Continued	Continued	Continued	Continued	Continued	Survey of algal resources of palk bay completed. Studies were made on succession of algal and use of agarophytes in the preparation of agar and food gellies.
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APPENDIX IV

(Vide Para 3.1 of the Report)

Project to be taken up from 1967-68 onwards.

1. Oil sardine fishery investigations.
2. Mackerel fishery investigations.
3. Crustacean fishery investigations.
4. Anchovy fishery investigations.
5. Polynomid fishery investigations.
6. Sciaenid fishery investigations.
7. Bombay-duck fishery investigations.
8. Pomfret fishery investigations.
9. Ribbon fish fishery investigations.
10. Sea, tuna and tuna-like fishery investigations.
11. Catfish fishery investigations.
12. Hilsa fishery investigations.
13. Porch fishery investigations.
14. Molluscan fishery investigations.

APPENDIX V

(Vide para 3.38 of the Report)

Statement indicating the recommendations and action taken thereon by the Government on Hickling Report

S. No.	RECOMMENDATION	ACTION TAKEN
1.	Increase the field staff for Fishery Survey.	On the basis of proposals received from the Director the field staff was strengthened.
2.	Work on the marine fish ponds at Mandapam should be closed down and the staff put on to other problems if results are not got within a year that such ponds would become an economic proposition.	On completion of experiments in hand the farm was closed down.
3.	Survey of sea weed resources of the North-West coast of India should be undertaken, temporary staff hired and appropriate programme of transacts drawn up.	This could not be taken up for want of vessel.
4.	Collect data of work on Rastrelliger and sardine being done at six points on the coast and see whether assessment of the shoals of these fishes could not be achieved by sampling one or two stations and redistribute the staff.	This problem was considered by the Research Committee. A working party was set up to collect the data available. The Research Committee has agreed on a co-ordinated research programme and the work has been taken in hand.
5.	Racial studies should be worked up and continued by studies in blood groups and haemoglobin components.	This has been taken in hand first with tagging. The results will indicate the exact methodology to be followed in delimitation of stock. Work on blood groups will be taken up if necessary.
6.	Systematic, anatomical and physiological work may be left to the Universities.	This could not be agreed to as Universities had not taken to much research work on fishes and some of the basic studies was essential for identification of stocks.

S. No.	RECOMMENDATION	ACTION TAKEN
7.	A net work of Hydrographical observation should be started along the whole of the Sardine and Mackerel West Coast up to the 100 fathom line or beyond it, to draw up a synoptic chart to predict the fluctuations in the big pelagic fisheries of mackerel and sardine.	A programme of this nature is only possible with a number of sea-going (deep sea) vessels and expert. Sanction has been received for one Research vessel and a number of exploration vessels which will be used for the programme. A Colombo Plan expert has also been requested for.
8.	An Officer should be sent to the National Institute of Oceanography in England for training in the study of the relation between meteorology and fisheries.	The training has been completed.
9.	Tagging experiments should be started on the 4 most important trawl caught fishes of the Bombay area.	Tagging has been started on Sardines and Mackerel on a small scale pending operation of vessels.
10.	Material and methods wing of the Central Institute of Fisheries Technology Unit should be transferred to Central Marine Fisheries Research Institute.	This could not be accepted. This research has nothing in common with Marine Biology.
11.	The following recommendations depend on the Acquisition of a suitable Research vessel :	The position regarding Research vessel has been reported in detail.
	(a) Net work of hydrographic surveys on the sardine and mackerel coast.	
	(b) Exploration and investigation of the fish and prawn stocks in deeper waters.	
	(c) Fish finding by asdic and echosounder to study fish, shoals and fish migration, reaction to lights, sound etc.	
	(d) Extensive trawling surveys in deeper waters off north-west coast for prawn and fish.	
	(e) Fish egg and larvae surveys.	
	(f) population dynamics of the trawls caught fish off the north-west coast.	

S. No.	RECOMMENDATION	ACTION TAKEN
12.	Training of two or three Research workers working on pelagic and demersal fisheries may be deputed for training in technique of fish finding by asdic and echo-sounder at the Fisheries Laboratory, Løvesloft or Norway.	This did not arise till the vessel had been planned. This will be arranged in India under the Indo-Norwegian Project or elsewhere after the vessel has been ordered.
13.	Some of the Research Units could be merged into Sub-stations.	Changes in the strength of the sub-stations and units have been made from time to time in accordance with the needs of the programme taken up.
14.	Investigation into the sardine and mackerel fisheries to be restricted to fewer centres and concentration of the staff at these centres.	This has been fully gone into and taking into account the needs of the programme staff has been provided.
15.	Grouping of staff and increases in the number of senior posts.	The number of senior posts has been determined from time to time and has been reviewed thoroughly taking into account the reorganised programme suggested by the Research Committee.
16.	Change of Headquarters of Survey Section to Hyderabad.	This could not be accepted as the Survey Unit would have been isolated. The Unit was shifted to Ernakulam.
17.	State with marine fisheries interest should be able to review the progress of research done under C.M.F.R.I., make their wishes known and coordinate their research work with that of C.M.F.R.I.	This is done at the level of the research committee where the States and Centre are represented.
18.	Central Fisheries Research Committee is valuable as a forum for discussion and advice and should be continued and meet more frequently.	It has been adequate to meet once a year.
19.	To create a Marine Fisheries Advisory Council not only with representatives of the States with marine interest but also representatives of Universities, University Grants	All bodies are represented in the research Committee except University Grants Commission. This has not been considered necessary so far.

S. No.	RECOMMENDATION	ACTION TAKEN
	Commission, Council of Scientific and Industrial Research and other agencies which finance fisheries or oceanographical research.	
20. Procurement of essential equipment and laboratory aids like photo-copying equipment, calculating machines, Aqualung, equipment, Bionocular, Microscope centrifuges, etc.		As reported by the Director, Central Marine Fisheries Research Institute, there is no difficulty now regarding these equipments which were indented and obtained from time to time.
21. The greatest item of inadequacy pointed out by the Expert is the absence of suitable research vessel with necessary equipments and accessories and has suggested the procurement of three vessels; viz., one for sardine and mackerel coast, one for demersal fisheries of the north-coast and one for the whole of East Coast.		With great difficulty, sanction has been obtained for one research vessel which will supplement the work of the Indo-Norwegian Project vessel.
22. The Department budget provision for tours should be increased to ensure frequent tours to isolated Fishery Survey Centres.		This has been regulated from time to time in the usual procedure of budgetting.

APPENDIX VI

Summary of Recommendations/Conclusions contained in the Report

S. No.	Reference to para. No. of the Report	Summary of Recommendations/Conclusions
1	2	3
1	1.15	The Committee note the pioneering efforts made by the Central Marine Fisheries Research Institute in the charting and exploitation of fishing grounds in the inshore and off-shore areas, studies on the life histories of component species and collection of biological, oceanographical and other environmental data which are essential for understanding the causes of fluctuations in the availability of fisheries and for introducing conservation measures, when required, to obtain steady optimum yields. The Committee would, however, like to point out that the estimated marine fish production in India has varied between 5·3 to 8·8 lakh tonnes during the years 1950 and 1964. There is a pressing need for increasing the production by means of increased catches so as to provide nutritious diet to the people, employment to a large number of fishermen and also provide an exportable surplus for purposes of earning foreign exchange.
	1.16	The Committee commend the steps taken by the Institute for the exploration of the oceanic fishery resources of the seas around India. They hope that the researches would be further intensified with special emphasis on the pelagic and oceanic fishes and crustacean. The Committee suggest that concerted steps be taken to gear up the work of the Institute by providing them with adequate essential equipments so that the objectives of the Institute are fully realised. The Committee would also stress the need for forging an intimate link with the fishing industry so that the researches undertaken by the Institute can be gainfully utilised.

1	2	3
2	1.21	The Committee realise that marine fisheries being essentially capture fisheries, all the basic research has to be carried out necessarily in the areas of occurrence of the fisheries. The research worker has to be where the fish and fisheries are distributed. Therefore, the Marine Fisheries Research Institute should necessarily be located nearest to important centres of fishing with facilities for reception of sea-going research and exploratory vessels as a <i>sine-qua non</i>.
	1.22	The Committee are surprised that although a period of 20 years has elapsed since the setting up of the Institute, the Ministry have now come to realise that Mandapam Camp is not ideally located for purposes of marine fisheries research. It should have been possible for the Director of the Institute to move the Ministry on this matter earlier than 1965 when the proposal was said to have been finally mooted by him. The Committee are unhappy to note that the main criterion, which guided the selection of Mandapam Camp as the headquarters of the Institute, was only the availability of buildings at the Camp and the Institute was located there despite the conviction that the place was not suitable for the purpose. The Committee have little doubt that had the Institute been located at a Central place, it could have made greater impact on research, and its output in physical terms would have been greater. The Committee are of the view that the Institute, which holds a pivotal position for research in marine fisheries, should be located at a central place. As, however, a heavy financial outlay is involved in shifting the Institute, the matter has got to be examined carefully. The Committee suggest that a study team consisting of representatives from the Central Government, the Institute and the concerned State Governments may be appointed to go into the question in all its ramifications before arriving at a final decision.
3	2.5	The Committee are unhappy to observe that there has been a gap between the sanctioned and actual strength of the scientific staff of the Institute from year to year. The Committee are also unhappy that the post of Assistant Research Officer for Bacteriology had been kept vacant for

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nine years even when it was realised that there was no possibility of getting a good Bacteriologist. The delay of three years in filling up the vacancy of the Senior Research Officer for Oceanography also appears to be indefensible. The Committee need hardly emphasise that the continuance of a large number of vacant posts is likely to have deleterious effect on the smooth functioning of a research institute. The Committee hope that the Indian Council of Agricultural Research, to which the Institute has now been transferred, would take note of the present position and take energetic steps to fill up the vacant posts.

2.6 The Committee trust that the Institute would not keep a large number of temporary staff for unduly long period and that the incumbents would be confirmed as soon as they fulfil the necessary conditions.

2.7 As regards scientific prsonnel vis-a-vis administrative staff, from the statement given in para 2.2 of the Report, it will be observed that as against an actual strength of 242 scientific and technical personnel in the Institute, there were 202 administrative and Class IV staff as on 1st April, 1967. In the opinion of the Committee in research institutes the emphasis should always be more on the scientific staff and less on the administrative and ministerial staff. It is, therefore, desirable to fix some norms and ratios between the scientific and technical staff on the one hand and administrative and ministerial staff on the other.

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2.11 The Committee note the organisational set-up and the functions of the Administrative Division of the Institute. The Committee suggest that the Standing Research Committee or the appropriate committee of the Indian Council of Agricultural Research may conduct a review of the present staffing pattern of the Institute with a view to locate the deficiencies in the working of the Institute in the various Divisions and suggest suitable remedial measures. The Committee also suggest that there should be an annual review of the staff position of the Institute by the Director as well as by the Council.

1	2	3
5	2.15	The Committee note with concern that 35 persons have left the Institute and its various Sub-stations during the last three years due principally to unfavourable pay-scales and meagre chances of promotion. The Committee feel that similar situation may be prevalent in other institutes dealing with fisheries research. The Committee have no doubt that the frequent flight of personnel from one institute to another seriously affects the quality of research. The Committee, however, are glad to note that the Indian Council of Agricultural Research has proposals to improve the pay-scales of the scientific staff and to give them better working conditions. The Committee hope that the Council would lose no time in reviewing the pay-scales of scientific staff prevalent in the fisheries research institutes on the lines of the recommendations made by the Committee in para 87 of their 75th Report (Third Lok Sabha) on the Ministry of Food and Agriculture (Department of Agriculture)—Indian Council of Agricultural Research.
6	2.17	In the opinion of the Committee, unless there are suitable channels of promotion for the various grades of officers and staff, they are likely to lose interest in their work and this will ultimately affect adversely the smooth working of the Institute. The Committee, therefore, feel that to give impetus to the scientific and other staff there should be a provision for creation of intermediate /selection grade posts. The Committee also suggest that the question of giving suitable incentives for meritorious work to the scientific and technical personnel may be examined.
7	2.21	The Committee feel that centralisation of administrative work relating to pay, allowances, leave, promotion, etc. of the staff employed in the Sub-stations/Units/Centres, at the Headquarters of the Institute at Mandapam may lead to certain amount of delay resulting in hardships for the staff. The Committee would suggest that the Indian Council of Agricultural Research may examine how best an improvement can be brought about in the present situation. The Committee consider that the financial powers of the Officers-in-Charge of the Sub-stations are inadequate. They suggest that the question of enhancing these

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powers may be considered so that Officers-in-Charge may be able to take decisions on the spot and approve items of expenditure without referring to the Headquarters every small item.

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3.8

The Committee have no doubt that the research programmes already approved by the Ministry for execution by the Institute would be continued by the Indian Council of Agricultural Research. They, however, would suggest that the economics of those projects which have continued for more than three years should be worked out to see whether it is worthwhile to continue them.

3.9

The Committee feel that the need of the hour is "coordinated research" and its application and they hope that it will be possible for the Indian Council of Agricultural Research to associate the State Departments of Fisheries in an ample and effective measure with the Central projects.

3.10

In view of the fact that initial training in basic research should continue to be with the universities and academic institutions, the Committee would like to suggest that universities of the maritime States may be persuaded to put increased emphasis on the training of researchers in the field of marine biology and, in fact, all fields of research pertaining to fisheries. The question of introduction of courses in fisheries in the curricula of the universities may be taken up with the University Grants Commission/Inter-University Board.

3.11

The Committee hope that the Council would see to it that the progress of research is not retarded due to paucity of funds.

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3.16

It appears from the information furnished to the Committee that some of the research work being done by the Central Marine Fisheries Research Institute at Mandapam Camp e.g., survey of fisheries resources, researches on marine biology, oceanography, etc. are also being done in some of the maritime States. The Committee would suggest, therefore, that a thorough study of the work being done at the Institutes set up by some of the States should be made so as to ensure that there is no duplication of efforts and expenditure on indential schemes. Since the basic idea

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in transferring the Central Marine Fisheries Research Institute and two other research institutes to the Indian Council of Agricultural Research is to have integrated and coordinated research work under one organisation, the Committee trust that the Council would look into the matter of coordination of research work undertaken by the Central and State Research Institutes. The Committee hope that the State Research Institutes would also be provided with adequate finances by way of timely grants and loans so that there is all-round development of research relating to fisheries.

- 10 3.20 The Committee would urge that a suitable method should be devised for channelising the grants through one agency, i.e., Indian Council of Agricultural Research, so that the unnecessary duplication and overlapping in the research work could be avoided and proper control exercised over the progress of various research schemes.
- 11 3.27 The Committee are constrained to observe that it has not been possible for Government to provide the Central Marine Fisheries Research Institute with its own research vessel even though its need in connection with marine fisheries investigations in India was recognised from the very inception of the Institute. They are all the more unhappy to note the indifference shown by the Government, even though they were aware that "VARUNA" could not meet the requirements of the Institute fully and the present arrangement is very unsatisfactory.
- 3.28 The Committee would like to be assured that a research vessel suitable for the purposes of the Institute will be obtained and supplied to the Institute at an early date.
- 3.29 The Committee feel that it should be possible for the Ministry to find enough foreign exchange for importing the minimum number of research vessels required if the Government are convinced that (i) these could not be built in India; and (ii) that there is urgent need for research vessels for fisheries development in the country. The Committee strongly feel that inadequate measures of this nature in the matter of research render the whole project a waste of men and material. In

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		any case the Committee would like to stress that the provision of a proper research vessel is an essential prerequisite for a Research Institute on Marine Fisheries.
12	3.31	The Committee realise that the question of constructing a research vessel for this Institute is linked up with the overall question of availability of indigenous capacity <i>vis-a-vis</i> imports. However, in the present context, they need hardly point out that the budget provisions should be made on a realistic basis as over-budgeting is as bad as under-budgeting. The Committee feel that before providing the sums in the budget for the year 1966-67 and again in the year 1967-68, the Government should have ascertained whether the supply of the vessel was at all likely to materialise in the course of one year.
13	3.35	The Committee note the present arrangements for collection of data regarding production of marine fish on an All-India basis. They also note that statistics are also collected and compiled by various maritime States. The Committee consider it desirable that there should be a single agency for the collection of data regarding marine fisheries and overlapping of effort in this direction should be avoided. The Committee hope that the Technical Committee on Fisheries Statistics would be able to offer constructive suggestions in the light of the review of the work done by the National Sample Survey, Central Marine Fisheries Research Institute and the State Governments.
14	3.37	The Committee find that the staff strength of the Fishery Survey and Statistics Division has not been augmented on the lines suggested by Dr. Hickling. The Division is still headed by a Senior Research Officer only. They suggest that the staff position of the Division may be reviewed further.
15	3.42	The Committee note that liaison and coordination is being maintained by the Institute with the Deep Sea Fishing Station, Bombay, Indo-Norwegian Project, and other Institutes set up by Central as well as various State Governments. There is, however, need to intensify the efforts so that any overlapping or duplication of research work

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may be avoided in the initial stages of the operation of any scheme. The Committee also suggest that the proposal of constituting a Coordination Committee in each State, as made at the meeting of the Standing Fisheries Research Committee (1965), may be actively pursued in consultation with the State Governments.

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3.45

The Committee regret to note that although Dr. Hickling submitted his report on the working of the Institute as far back as 1962, the Government have not yet taken action on some of the recommendations contained in the report. The Committee also regret that the decisions arrived at by the Government on the recommendations made by Dr. Hickling were not formally communicated to the Director of the Institute resulting in unnecessary confusion and misunderstanding. The Director being the head of the Institute should have been taken into confidence and consulted in the matter of the implementation of the recommendations. The Committee hope that the Indian Council of Agricultural Research will pay due attention to such of the recommendations of Dr. Hickling as have not yet been implemented.

3.46

The Committee also stress the need for periodical evaluation of work of the Institute by an Achievement-Audit Committee consisting of specialists. In this connection, the Committee would like to invite the attention of the Ministry to the recommendation made by them in para 9 of their 76th Report (Third Lok Sabha) on the Ministry of Food and Agriculture (Department of Agriculture)—Indian Agricultural Research Institute.

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3.52

The Committee are glad to learn that important work that is being carried out by the Marine Biological Association of India at Mandapam Camp, which, it appears to the Committee, is being solely run with the active help and initiative of the Director and staff of the Central Marine Fisheries Research Institute. In view of the importance of the work being done by the Association, which needs no emphasis, the Committee would suggest that the Indian Council of Agricultural Research should give suitable encouragement and financial assistance to this Association which is stated to have already earned international recognition.

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18	4.6	The Committee need hardly point out that mere collection of useful information without disseminating it to the users serves no purpose. They regret to note in this connection that "except for casual information, the Institute does not maintain direct liaison with the Industry." They would, therefore, urge that all the Central Fishery Institutes should maintain close liaison and co-ordination with the users organisations, associations and industry and pass on the fruits of research and investigations freely to them as well as to fish farmers, fishery operatives, and fish processors so that the information could be utilised for the development of India's fisheries.
	4.7	The Committee consider it unfortunate that as a measure of economy the ten Fisheries Extension Units started by the Ministry in 1956-57 had to be wound up on 31st March, 1967. Now that the Government is considering the question of strengthening extension work, the Committee would stress the need for establishment of Central Government Extension Units at the earliest possible opportunity, wherever necessary. They would also recommend that a scheme may be worked out by which close liaison and coordination could be maintained between the Central Extension Units and State Extension Units on the one hand and between State Extension Units <i>inter se</i> on the other.
	4.8	The Committee hope that the Extension aspect of the Central Marine Fisheries Research Institute will be looked after adequately now that the Institute has gone under the control of the Indian Council of Agricultural Research.
19	4.15	The Committee need hardly stress that timely publication of Bulletins, News Letters, and other periodical publications on technology can go a long way in bringing home the results of research and investigations made by the various Research Institutes to the users. The Committee commend the efforts made by the Central Marine Fisheries Research Institute in this behalf. They, however, feel that there is much leeway yet to be made in this matter. They suggest that Government should take suitable steps in this direction early so that the results of research could be brought to the level of people engaged in fishing

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in an easily assimilable form. One of the ways in which this could be done is to bring out publications in simple regional languages and make them accessible to all concerned. The Committee suggest, therefore, that this question be taken up with the concerned State Governments so that the results of researches and investigations made by various Fisheries Research Institutes are taken advantage of by the fishermen, fish processors etc.

4.16 The Committee recommend that provision of a Rotaprint Press for the Institute should be expedited.

4.17 With regard to the suggestion that the Institute be provided with facilities to bring out its own journal, the Committee would suggest that the matter may be examined by the Publication Committee of the Indian Council of Agricultural Research in all its aspects.

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4.23 The Committee feel that very few universities in India are taking advantage of the facilities provided at the Institute for research leading to the award of Ph.D. and D.Sc. Degrees. They are not aware of the reasons why Madras University has not recognised the Institute as a centre for carrying out research leading to award of Ph.D. and D.Sc. degrees. The Committee suggest that concerted efforts should be made to attract more and more researchers for conducting research at the Institute. They also suggest that the Ministry may take up with the State Government of Madras and the University of Madras the question of according recognition to the Institute as a centre for research on marine biology leading to the award of doctorate degrees.

The Committee note that only 35 scientists and research workers had come to the Institute from foreign countries for doing research work (23 in 1962; 10 in 1964; and 2 in 1966). The Committee suggest that appropriate steps may be taken to attract a larger number of researchers from foreign countries for doing research work at the Institute, after fully catering to the needs of Indian research workers.

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21	4.29	The Committee are concerned to note that the Library of the Institute which is claimed to be the best Library in fisheries and marine sciences in South-East Asia is poorly equipped and inadequately staffed for the last several years. They are unhappy to learn that Government have not taken any action to equip and staff the Library adequately even though the matter has been, on several occasions referred by the Institute to them. The Committee hope that the Indian Council of Agricultural Research will take immediate and adequate steps in this behalf.
22	4.33	The Committee note that the Laboratory is now well equipped.
23	4.40	The Committee need hardly emphasise the desirability of staffing the General Museum of the Institute adequately. They apprehended that if it is not staffed and maintained properly the exhibits may deteriorate for lack of proper care and be lost to the posterity due to neglect. They would also urge that a guide lecturer should be provided for the Museum so that he could explain the exhibits contained therein to the students and visitors who visit the Museum in large numbers.
24	5.5	The Committee have already commented on the 'Decentralisation of work' as between the Headquarters of the Institute and its various sub-stations/units/centres in para 2.21 of the Report. The Committee feel that the question of greater delegation of financial and administrative powers to the various officers-in-charge should be gone into thoroughly so as to eliminate unnecessary delays.
25	5.13	The Committee feel that expansion of the activities of the Madras Sub-Station of the Institute is closely linked with the provision of permanent buildings for the Sub-station. The Committee are concerned to note that no staff expansion has been made purely on the ground that there is paucity of accommodation and working space. They apprehend that the work on the Fourth Plan Schemes, when approved, would seriously lag behind, if simultaneous steps are not taken to

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provide permanent buildings for the Sub-station, especially in view of the difficulty in obtaining rented accommodation in Madras. Now that the Institute has gone under the control of the Indian Council of Agricultural Research, the Committee hope that immediate steps will be taken in this direction for concerted action both with regard to personnel and equipment on the one hand and accommodation on the other.

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5.19

The Committee regret to note that the administrative set-up of the Ernakulam Sub-station is inadequate. They need hardly point out that an adequate administrative set-up is a prerequisite for smooth and efficient functioning of an institution. They would urge that the matter be examined thoroughly and an early decision taken.

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The Committee also feel that proper supervision over Sub-station is difficult in view of the fact that it is housed in two separate buildings quite at a distance from one another. The Committee would like the Indian Council of Agricultural Research to look into this question immediately and decide if the premises of the former Indian Coconut Research Institute could be allotted to the Sub-station for the time being pending construction of its own building.

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In view of the fact that Calicut is a very important fishing centre, the Committee stress that the Sub-station of the Institute at Calicut should be strengthened and the feasibility of providing enough landing and berthing facilities there considered.

APPENDIX VII

(vide Introduction)

Analysis of Recommendations/Conclusions contained in the Report.

I. CLASSIFICATION OF RECOMMENDATIONS

A. Recommendations for improving the Organisation and working:

Serial Nos. 1, 2, 3, 4, 5, 6, 7, 11, 12, 14, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26 and 27.

B. Recommendations for effecting economy:

Serial Nos. 8, 9, 10, 13 and 15.

II. ANALYSIS OF THE RECOMMENDATIONS DIRECTED TOWARDS ECONOMY:

Sl. No.	S. No. as per summary of recommendations (Appendix VI)	Particulars
(1)	(2)	(3)
1	8	The Committee have suggested that the economics of those projects which have continued for more than three years should be worked out to see whether it is worthwhile to continue them.
2.	9	The Committee have suggested that a thorough study of the work being done at the Institutes set up by some of the States should be made so as to ensure that there is no duplication of efforts and expenditure on identical schemes.
3.	10	Suitable method should be devised for channelising the grants through one agency, i.e. Indian Council of Agricultural Research, so that the unnecessary duplication and overlapping in the research work could be avoided and proper control exercised over the progress of various research schemes.
4.	13	There should be a single agency for the collection of data regarding marine fisheries and overlapping of effort in this direction should be avoided.
5.	15	Liaison and coordination with other Research Institutes set up by Central Government should be intensified so that any overlapping or duplication of research work is avoided in the initial stages of operation of any scheme.

Sl. No.	Name of Agent	Agency No.	Sl. No.	Name of Agent	Agency No.
27.	Bahree Brothers, 188, Lajpatrai Market, Delhi-6.	27	33.	Bookwell, 4, Sant Naran-kari Colony, Kingsway Camp, Delhi-9.	90
28.	Jayana Book Depot, Chaparwala Kuan, Karol Bagh, New Delhi.	66	MANIPUR		
29.	Oxford Book & Stationery Company, Scindia House, Connaught Place, New Delhi—1.	68	34.	Shri N. Chaoba Singh, News Agent, Ramlal Paul High School Annex, Imphal.	77
30.	People's Publishing House, Rani Jhansi Road, New Delhi.	76	AGENTS IN FOREIGN COUNTRIES		
31.	The United Book Agency, 48, Amrit Kaur Market, Pahar Ganj, New Delhi.	88	35.	The Secretary, Establishment Department, The High Commission of India. India House, Aldwych, LONDON, W.C.—2.	
32.	Hind Book House, 82, Janpath, New Delhi.	95			